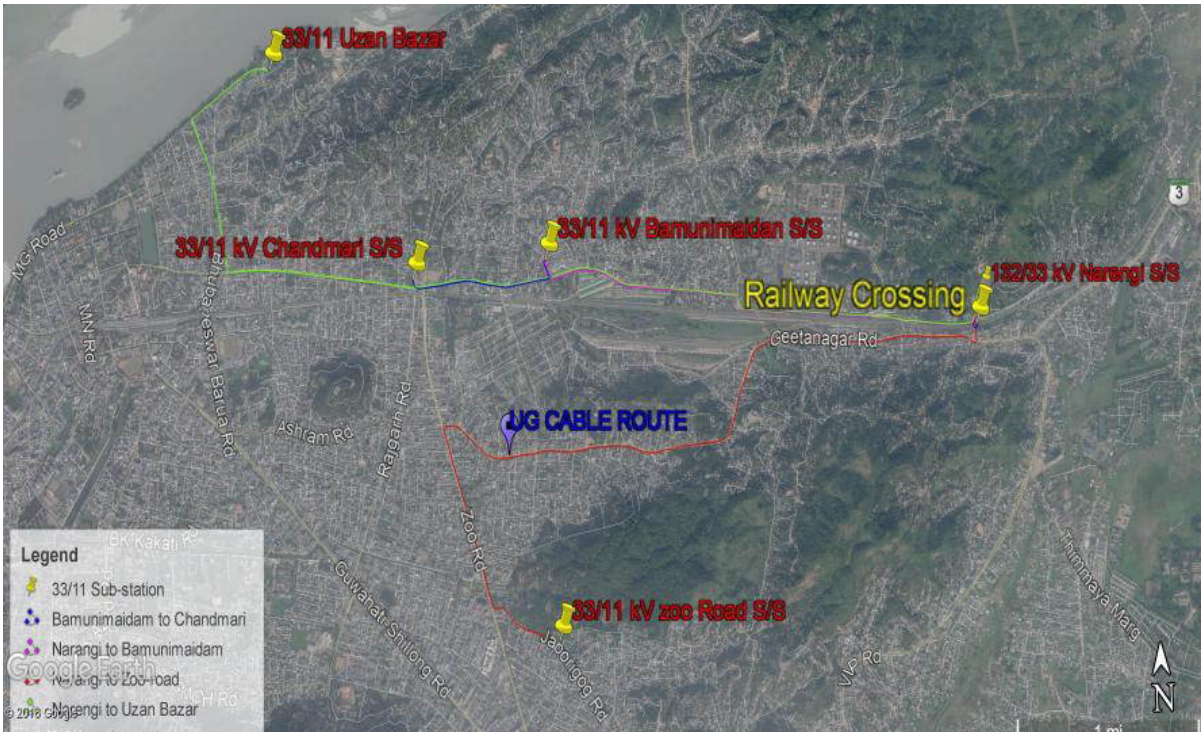
INITIAL ENVIRONMENT ASSESSMENT REPORT (IEAR)

FOR

33 KV UNDERGROUND CABLE LAYING WORKS (NEW SCOPE) IN GUWAHATI UNDER NERPSIP



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For

Assam Electricity Grid Corporation Limited (AEGCL)
Assam Power Distribution Company Limited (APDCL)

ASSAM/IEAR/TRANCHE-1/2022 /R3 **May, 2022**

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EXECUTIVE SUMMARY

This Initial Environmental Assessment Report (IEAR) of the proposed additional five (5) nos. of 33 kV Underground (UG) cabling project in Guwahati has been carried out in accordance with the AEGCL/APDCL's Environmental and Social Policy & Procedures Frameworks (ESPPF) & safeguard requirements of The World Bank. The scope of this IEAR is limited to the environmental and social assessment of the following five nos. of 33kV Underground (UG) cable lines to be laid in the locality of Narengi, Bamunimaidam, Chandmari, Zoo Road, Uzan Bazaar, Paltan Bazar and Stadium area of Guwahati city which are proposed as new elements under Pkg. ASM-DMS-04 by APDCL and subsequently approved by CEA. The project components are;

1. 33 kV UG Cable line from 132/33 kV Narengi S/S to 33/11 kV Bamunimaidan S/S – 4.419 km
2. 33 kV UG Cable line from 33/11 kV Bamunimaidan S/S to 33/11 kV Chandmari S/S – 1.482 km
3. 33 kV UG Cable line from 132/33 kV Narengi S/S to 33/11 kV Zoo Road S/S – 8.798 km
4. 33 kV UG Cable line from 132/33 kV Narengi S/S to 33/11 kV Uzan Bazaar S/S – 9.134 km
5. 33 kV UG Cable line from 132/33 kV Paltan Bazar to 33/11 kV Stadium S/S – 1.6 km

The proposed 33 kV UG lines are essential for improving the power supply system in the rapidly growing Guwahati city area. Implementation of these project components will improve quality, reliability, security and enhancement of the power supply in the greater Guwahati area. The specific requirement of underground cabling within Guwahati GMCH area has arisen due to unavailability of overhead Right of Way in the crowded Guwahati City area. Accordingly, CEA after thorough deliberation with POWERGRID and APDCL has agreed to approve as additional scope under NERPSIP in Assam.

The Project components will include laying of 25.433 km of 33 kV underground cable in 5 segments. The Project components are confined to Guwahati city of Assam and do not involve any environmentally and social sensitive area.

Environmental and social impacts associated with proposed project is mostly temporary with site-specific disturbance/impacts during laying of UG cable along the existing road. During construction, traffic congestion and drilling waste management will be major issues for which site-specific plan has been formulated to mitigate the same. Further, based on present E & S assessment, a detailed Environment Management Plan (EMP) has been prepared identifying all possible impacts associated with the project and possible mitigation measures along with clear responsibility allocation including responsibility of the construction contractor for proper implementation and monitoring of EMP provisions.

However, with the deployment of innovative HDD (Horizontal Directional Drilling) and effective site-specific construction management plan, minimum disturbance/impacts to surroundings and less inconvenience to public is anticipated. Further, the local communities, shopkeepers and other stakeholders have been engaged continuously through on-site discussions starting from planning stage and environmental assessment process. Formal public consultations in the Project areas have already been conducted which will also be continued during project implementation. The grievance redress mechanism shall function according to AEGCL/APDCL's ESPPF to address/resolve the concerns and grievances of PAPs and public in general.

SECTION –I: PROJECT DESCRIPTION

1.0 BACKGROUND

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

The road-map for development of power sector specifying the need for strengthening of overall Transmission, Sub-transmission and Distribution system of North Eastern Region of India and Sikkim was brought out in the “Pasighat Proclamation on Power” released during the first sectoral summit of North Eastern Council 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), Central Electricity Authority (CEA) to chalk out action plan for strengthening of on transmission, sub-transmission and distribution sectors of the North Eastern Region. The sub-group submitted its report in December, 2007 wherein a comprehensive scheme namely the **“North Eastern Region Power System Improvement Project”** for strengthening of transmission, sub-transmission and distribution system has been envisaged by CEA in consultation with POWERGRID and States of North Eastern Region and Sikkim.

Accordingly, sanction for **‘North Eastern Region Power System Improvement Project (NERPSIP)** for six (6) States (Assam, Manipur, Meghalaya, Mizoram, Tripura and Nagaland) for strengthening of the Intra-State Transmission and Distribution Systems (33kV and above) was accorded by Government of India vide Office Memorandum dated 1st December 2014 at an estimated cost of Rs. 5111.33 crore (Feb, 2014 Price level) with the completion schedule of 48 months from the date of release of first installment of funds. The scheme was approved to be funded by the Government of India through the Budget of Ministry of Power and The World Bank on 50:50 basis.

Presently, all the six NER States are connected to transmission network at 132 kV and below. The 33 kV system is the backbone of power distribution system in the six NER States. In order to reduce the gap between the requirement and availability of the intra-state transmission and distribution system, it is necessary to provide 220 kV /132 kV connectivity to all the six NER States for proper voltage management and reduce transmission losses. Similarly, the distribution system in all six NER States which mainly relies on 33 kV network is also required to be strengthened substantially.

Therefore, implementation of this project will create a reliable state power grid and improve its connectivity to the upcoming load centers, and thus extend the benefits of the grid connected power to all the consumers. The project would also provide the required grid connectivity to such villages and towns of the States, where development of distribution system at the downstream level has been taking place under GoI sponsored RGGVY/APDRP/R-APDRP schemes. This project is a major step towards meeting the national objective of "Power to All" through enhancement in access of consumers to grid connected power supply through improving its availability and reliability, thereby facilitating inclusive growth. This shall also

increase the per capita power consumption of these States, which is lagging behind the average national consumption and shall contribute to the economic development of the North-Eastern Region.

For execution of the NERPSIP, Ministry of Power (MoP), GoI has appointed POWERGRID as Design cum Implementation Supervision Consultant (i.e. Project Management Consultant-PMC) and now re-designated as Implementing Agency (IA) to six North Eastern States for the said project. In this regard, a Memorandum of Understanding (MoU) has been signed between Power Grid Corporation of India Ltd. (POWERGRID) and all the State Utilities, wherein POWERGRID will execute the projects and hand over the assets to the respective States upon progressive commissioning for taking care of operation and maintenance of assets.

The project components under NERPSIP in Assam inter-alia include laying of 132 kV & 33 kV underground cables in Guwahati (within GMCH area) in the Kamrup (Metropolitan) District. The present report deals with possible environmental and social issues and proposed mitigation measures associated with the implementation of Underground (UG) cable lines (new elements) in Guwahati area under PKG-ASM-DMS-04 of the NERPSIP, Assam.

1.1 BENEFITS OF THE PROJECT:

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

1.2 PROJECT JUSTIFICATION

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

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

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

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

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

The underground cabling works in Guwahati GMCH area are priority schemes under Tranche-1 and are essential for improving the power supply system in the rapidly growing Guwahati city area. Implementation of these schemes will improve quality, reliability, security and enhancement of the power supply in the greater Guwahati area. In addition to the already sanctioned elements of the U/G cabling project under NERPSIP in Assam, the State Utility i.e. APDCL has proposed for additional five (5) nos. of 33 kV U/G cable lines in Guwahati in order to cater the growing power demand in some specific city areas like Uzan Bazaar, Narengi, Chandmari, Bamunimaidam, Zoo Road, Paltan Bazar and Stadium etc. The specific requirement of underground cabling within Guwahati GMCH area has arisen due to unavailability of overhead Right of Way in the crowded Guwahati City area. Accordingly, CEA after detailed deliberation with POWERGRID and APDCL has agreed to approve the scheme under the scope of NERPSIP in Assam. Copy of Minutes of Meeting held on 30.05.2019 at Guwahati is enclosed as **Annexure-1**.

1.3 PROJECT HIGHLIGHTS

a)	Project Name	:	NER Power System Improvement Project (NERSPIP) – Tranche- I, Assam
b)	Location	:	Different parts of Assam State
c)	Beneficiary States/UT	:	Assam
d)	Project Cost	:	Rs 1473.80 Crores
e)	Commissioning Schedule	:	December, 2020

1.4 PRESENT STUDY & SCOPE OF WORK

The need for the Initial Environment Assessment (IEA) of the projects has arisen in order to comply with the World Bank policy guidelines and also in line with the Environmental and Social Policy & Procedures Framework (ESPPF) adopted by AEGCL/APDCL for implementation of the NERPSIP. The purpose of this IEA is to identify possible environmental and social issues associated with the additional five (5) nos. of 33 kV Underground (UG) cabling project in Guwahati and to ensure that appropriate safeguard measures are in place during the execution of the project for achieving the goal of sustainable development.

The scope of this IEAR is limited to the environmental and social assessment of the following five (5) nos. of 33 kV Underground (UG) cable lines to be laid in the locality of Narengi, Bamunimaidam, Chandmari, Zoo Road, Uzan Bazaar, Paltan Bazar and Stadium area of Guwahati city which are proposed as new elements under Pkg. ASM-DMS-04 by APDCL and subsequently approved by CEA.

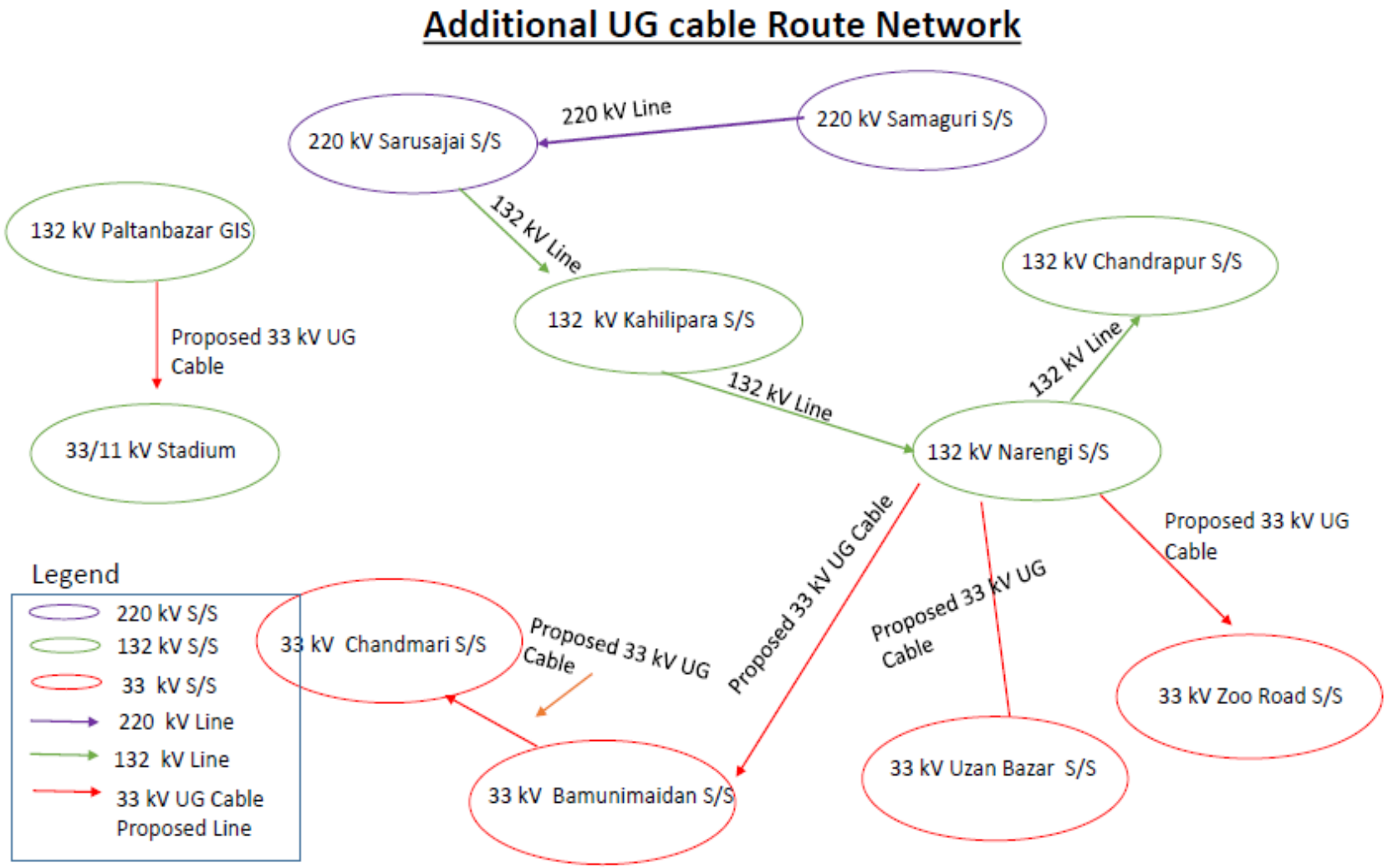
S.N.	Name of the 33 kV U/G cable line	Length (Km)
1	132/33KV Narengi S/S to 33/11 kV Bamunimaidan substation	4.419
2	33/11KV Bamunimaidan S/S to 33/11 kV Chandmari substation	1.482
3	132/33KV Narengi S/S to 33/11 kV Zoo Road substation	8.798
4	132/33KV Narengi S/S to 33/11 kV Uzan Bazaar substation	9.134
5	132/33 kV Paltan Bazar to 33/11 kV Stadium	1.6

The instant project involving laying of 33kV UG cabling broadly comprises of following activities:

- ✓ **Excavation of Trial/Inspection Pit**: Initially Trial/Inspection pit of dimension (2 x 2 x 3) m^3 will be dug along the proposed route at an average distance of 100 meter.
- ✓ **HDD machine placement**: Horizontal Deviation Drilling (HDD) Machine is placed near the entry pit with proper barricading.
- ✓ **Drilling/Reaming:** Drilling process start with piloting so as to trace the route. Bore holes are made with reamer of different diameter.
- ✓ **HDPE Pipe Jointing**: HDPE pipe are joined for 100 m section by jointing kit and pipe are aligned properly.
- ✓ **HDPE Pipe Pulling**: The pipes are pulled for 100 m.
- ✓ **Backfilling of Pit and shifting of machine**: After pipe is pulled pits are backfilled and levelled properly and thereby machine is shifted to a new place.
- ✓ **Cable pulling**: Drums are placed at the middle point of the section and cable is pulled from both ends.
- ✓ **Construction of Joint Box**: Joint Box are placed at the proper jointing pit.
- ✓ **Cable Jointing**: Jointing of the cable is done inside the jointing box.
- ✓ **Backfilling and covering of Joint box**: After backfilling, Joint Box are covered with slab for safety.

A schematic map showing all the proposed route of UG cable covered under the subject IEAR is placed in **Exhibit – 1.**

Figure – 1: Schematic Map Showing Proposed UG Cabling Work



SECTION – II: BASELINE DATA

2.0 The proposed sub-projects comprising underground cabling works are in the locality of Narengi, Bamunimaidam, Chandmari Zoo Road, Uzan Bazaar area of Guwahati (GMCH jurisdiction) in Kamrup metro district of Assam. The basic environmental settings of the State and subproject area district are given below:

2.1 ASSAM:

Assam has a geographic area of 7.84 million ha, which constitutes 2.39% of the country's total area. It is situated between latitude 24°07' to 28°00' N and longitude 89° 42' to 96° 02'E.

Topographically, the State can be divided into three parts, viz. the Brahmaputra valley, the Surma valley and the Assam range. The first two parts are plain areas, while the Assam range is a mountainous region. The general land use pattern of the State is given in **Table 2.1**.

Table-2.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	7,844	
Reporting area for land utilization	7,850	100.00
Forests	1,853	23.60
Not available for cultivation	2,620	33.37
Permanent pastures and other grazing lands	160	2.04
Land under misc. tree crops & groves	196	2.49
Culturable wasteland	78	0.99
Fallow lands other than current fallows	52	0.66
Current Fallows	81	1.03
Net area sown	2,811	35.80

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

Kamrup Metro district was created on 3rd February 2003 by the bifurcation of Old Kamrup district. The district is located in Western Assam with headquarters at Guwahati, which is also the capital city of the state of Assam. The co-ordinates of the district are 26°11' N and 91°44' E. The district has a total Geographic Area of 127.84 sq Kms.

Climate:

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

Rainfall, one of the highest in the world (between 178 and 305 cm), is concentrated in 4 months, June to September. The State experiences floods and droughts. Annual rainfall varying from 1,500 mm to 3,750 mm. The average temperature in January ranges from 10°C to 23° C and in July it ranges from 26° C to 32° C.

The climate of the sub-project district resembles more or less with the climate of the State. Guwahati city has a humid subtropical climate (Köppen climate classification). The average annual temperature in Guwahati is 24.0°C. The annual rainfall is around 2500 mm. The driest month is December. In July, the precipitation reaches

its peak, with an average of 690 mm. The temperatures ranges from 8 °C to 38 °C during different months of the year.

Minerals:

Coal, petroleum and natural gas, limestone and minor minerals are produced in Assam. Coal occurs in Tinsukia, Dibrugarh, North Cachar Hills, Sivasagar and Lakhimpur districts. Assam coal is friable in nature and has high sulphur content Deposits of banded magnetic quartzite occurs in Kamrup and Goalpara districts, Limestone occurs in Lakhimpur, North Cachar Hills, Karbi Anglong, Nagaon and Sivasagar districts. Kaolin is found in Karbi Anglong and Lakhimpur district. The Digboy oil fields in Lakhimpur district and Moran and Rudrasagar oil fields in Sivasagar district are the major source of oil and gas. Hydrocarbons are struck in Borsilla, Changmaigaon, Kurgaon and Rajgarh in the past. Sillimanite bearing rocks occur in Karbi Anglong district. Assam continued to be the 3rd largest producer of Petroleum (crude) and natural gas in the country accounting for 16% and 8% respectively of the total production of this mineral in the country.

Soil:

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

Water Resources:

Brahmaputra Basin comprises of sub-basin of Subansiri, Jia Bharali, Badeng-Pubnoi, Dhansiri, Anas, Champamati, Dholai, Buridihing, Disang, Kopili, Kalang and Meghna Basin comprises of sub- Basin of Barak River. Assam is dominated by the Brahmaputra river (length: 2900 km). Its drainage area is roughly 935,500 sq. km.

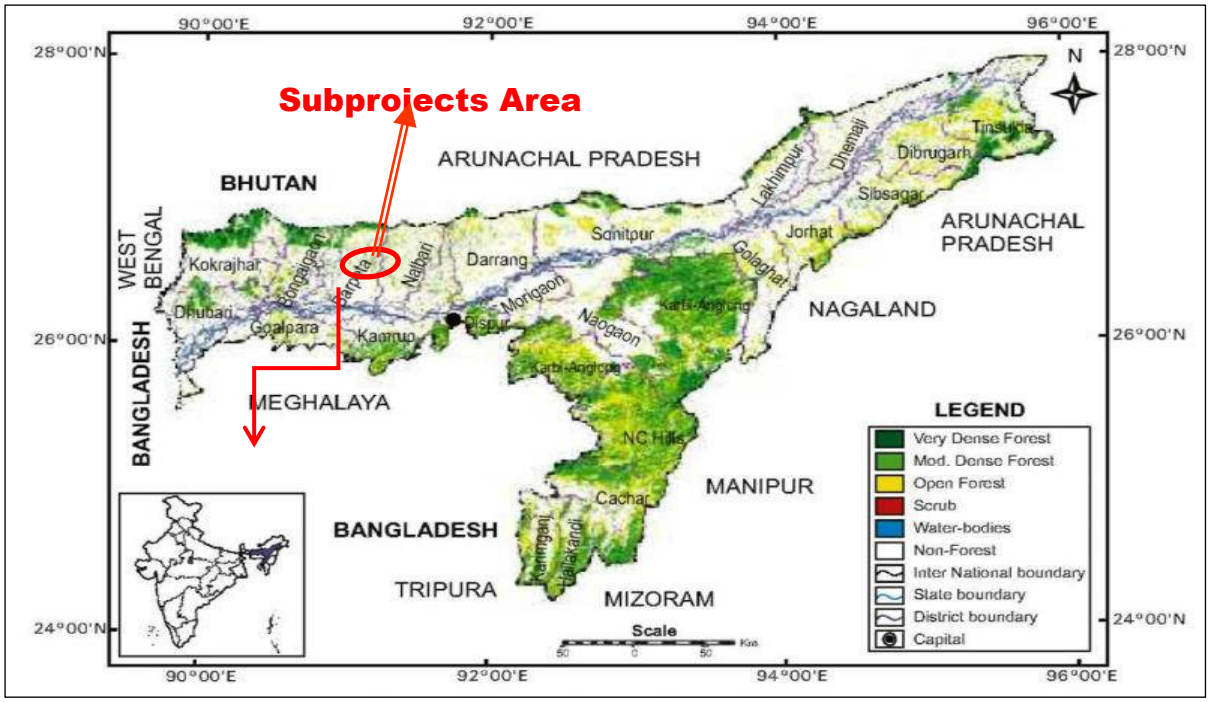
The major rivers flowing through sub-projects area district are Brahmaputra and Bharalu However, the proposed UG cables alignments do not involve any river crossing.

Groundwater occurs under unconfined to semiconfined condition occupying an area of about 200 sq. km. in and around Haihata – Dumunichowki of the project district which is under artesian condition. In other parts also, the water level rests at shallow depth and in major part, it rests between 2 – 5 m bgl during pre-monsoon period. The study of long term water level trend shows no significant change in rise/fall in water level in the last 10 years.

Ecological Resources:

Forest: The recorded forest area of the state is 26,832 sq. km which constitutes 34.21% of the geographic area of the State. According to legal status, Reserved Forests constitute66.58 % and Un-classed Forest 33.42% of the total forest area. Forest Map of Assam is enclosed as **Map-1**.

Forest types occurring in the State are Tropical Wet Evergreen, Tropical Semi-Evergreen, Tropical Moist Deciduous, Sub Tropical Broad Leaved Hill, Sub Tropical Pine and Littoral and Swamp Forests. Based on interpretation of satellite data pertaining to October-December, 2015, total forest cover is 28,105 sq. km which is 35.83% of State's geographical area. In terms of forest canopy density classes, the State has 2,797 sq. km very dense forest, 10,192 sq. km moderately dense forest and 15,116 sq. km is open forest**.**



Map-1: Forest Map of Assam

The proposed 33 kV underground cable sub-projects are confined in Guwahati city (GMCH area) under Kamrup Metropolitan district of Assam. Therefore, there is nil forest involvement in the scheme. The details of forest resources available in the undivided Kamrup district, from which Kamrup Metropolitan district was carved out is given below:

District	Geographic area	(Area in Sq. km)				% Forest cover
		Very Dense forest	Mod. Dense forest	Open forest	Total	
Kamrup	4060	50	646	683	1379	33.97

Source: Indian State of Forest Report 2017

The proposed distribution subprojects are confined in Guwahati city (GMC area) under Kamrup Metropolitan district of Assam. Also, all the distribution lines are underground and are passing/ shall pass through the existing PWD road with sufficient width. Since all the transmission and distribution lines are underground and are passing/ shall pass through the existing PWD road with sufficient width, involvement of flora along routes of all transmission and distribution lines under the subject scheme has been completely avoided.

Protected Areas: The Protected Area (PA) network in Assam occupies 4069.25 km2 area, which constitute about 5.19% of the state's geographical area. The Protected Area Network includes 5 National Park (NP) and 20 Wildlife Sanctuaries

(WLS). The State has four Tiger Reserves (TR) namely Kaziranga, Manas, Orang and Nameri. Manas TR has also been declared as a Biosphere Reserve (BR), the other BR of the state is Dibru Saikhowa WLS. Kaziranga NP and Manas WLS are also included in the World Heritage sites. Out of these, 2 protected areas i.e. Amchang WLS and Deepor Beel WLS falls in Kamrup (M) district. However, the proposed distribution UG cables do not pass through these protected areas. In the instant scheme, all such areas are completely avoided through careful route selection. Details of the protected area is presented below in Table below. Map showing location of protected areas in the district is given at **Map-2**.

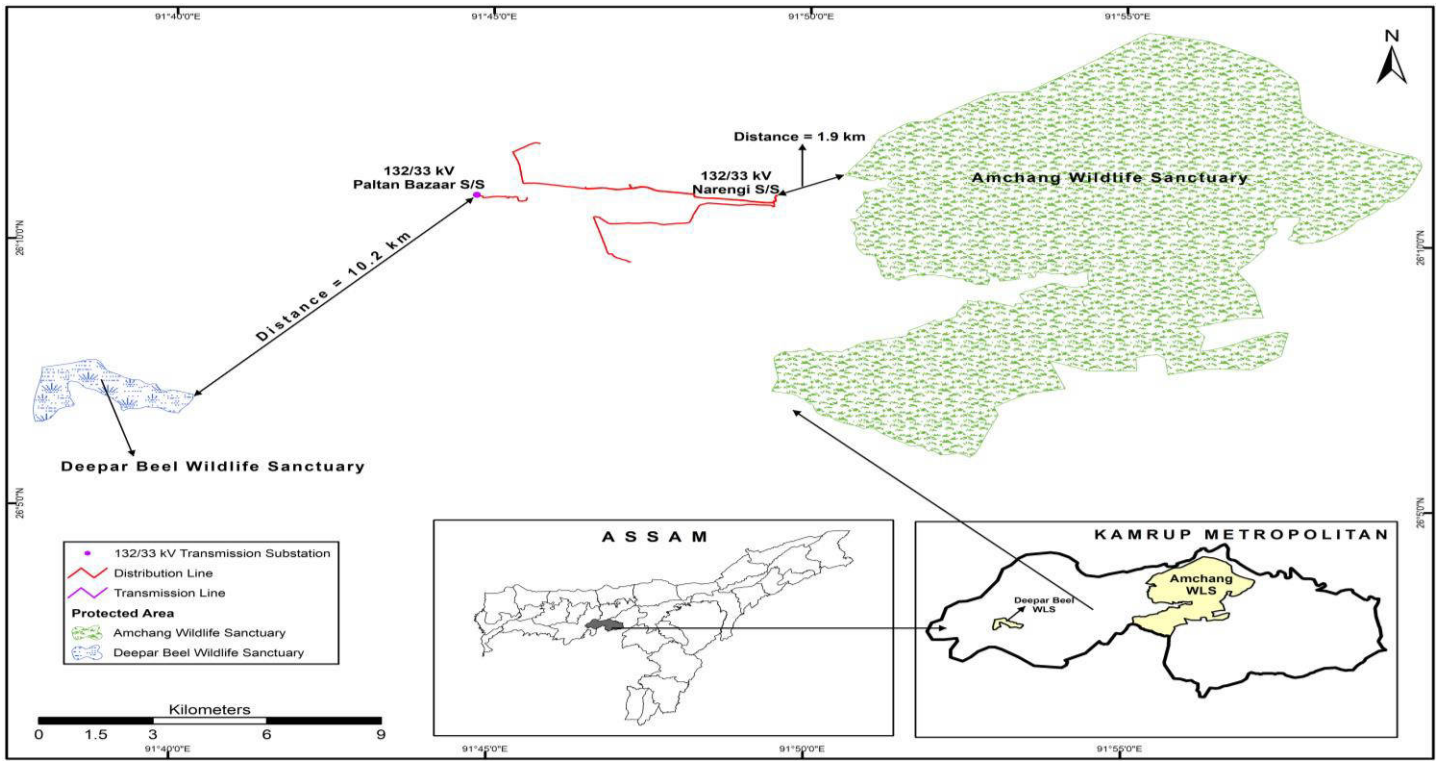
Table Protected Area Network in Kamrup (M) District

S. No.	Protected Areas	Area (km^2)	Year of Notification	ESZ Area (km^2)	Year of ESZ Notification
1	Amchang Wildlife Sanctuary	78.64	2004	109.99	2017
2	Deepar Beel Wildlife Sanctuary	4.14	2009	148.98	2021

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

State has also 1 Ramsar Site & 46 Important Bird Areas (IBA). The State is famous for One Horned Rhino & Elephant.

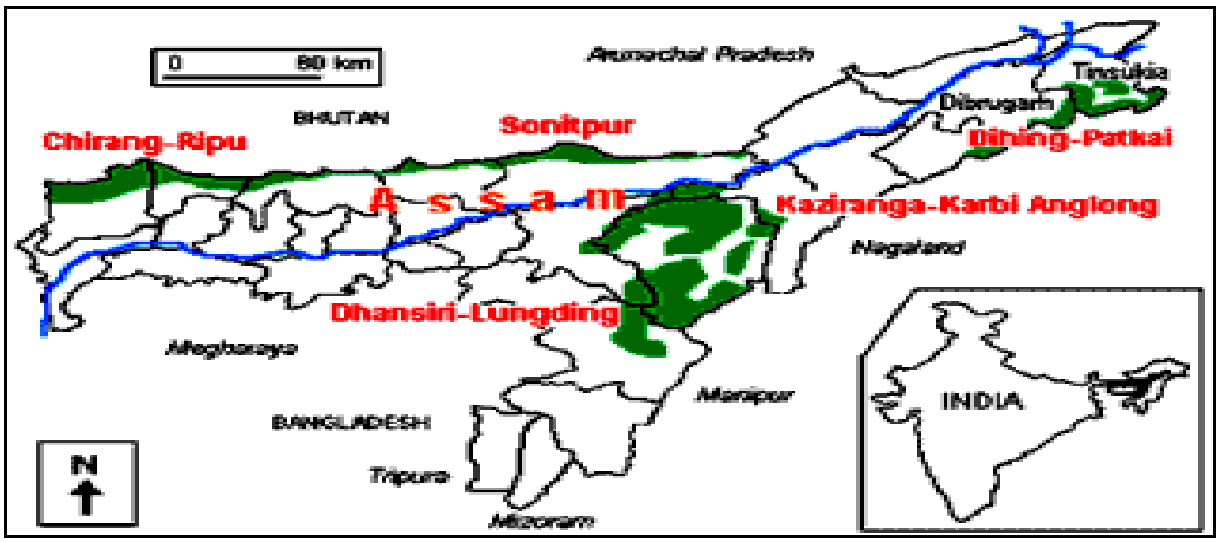
Map 2: Protected Area w.r.t. Sub Project Location



Elephant Reserves

There are five Elephant Reserves and Eight Elephant Corridors connecting these Elephant Reserves, Protected Forest and nearby forests locating in the neighboring states (viz. Arunachal Pradesh and Meghalaya). Some of these corridors are 0.5 km wide and are proximity to or on the major settlement. Moreover, these corridors also recorded man-elephant conflict due to forest degradation and encroachment of corridor land by settlement and agricultural land.

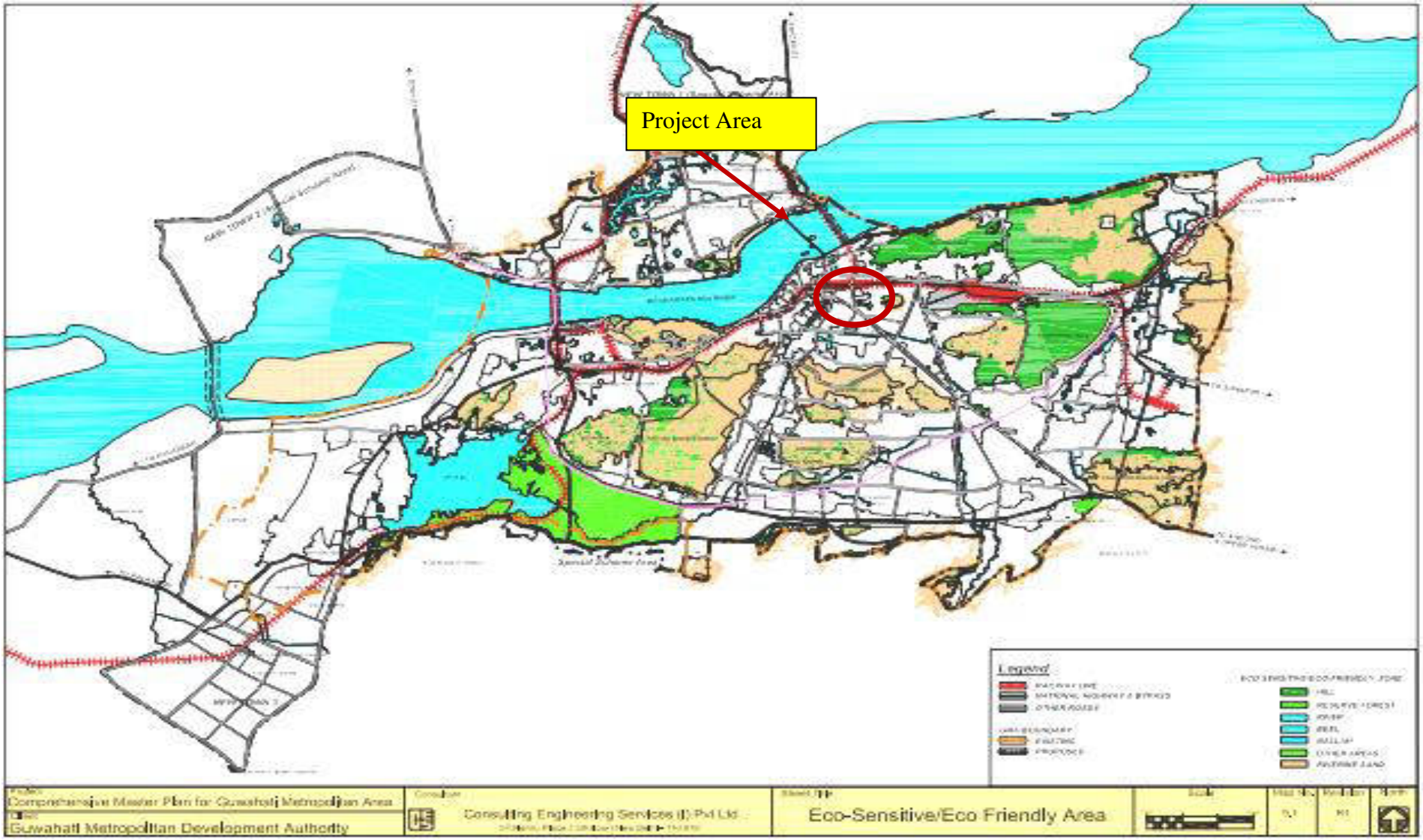
The Elephant Reserves (ER) in the state comprises of Chirang-Ripu ER, Sonitpur ER, Dining Patkai ER, Kaziranga-Karbi Anglong ER and Dhansiri-Lungding ER. Total area of these ERs is 10967 sq km. Since none of the Elephant Reserves falls under the Kamrup (M) district, therefore, there will not be any impact of any magnitude on the Elephant Reserves due to the construction of subprojects.



Guwahati city also happens to be a part of Indo-Burma Biodiversity Hotspot. The city is surrounded by eighteen hills. Guwahati has eight Reserve Forests (South Kalapahar RF, Fatasil RF, Jalukbari RF, Gotanagar RF, Hengrabari RF, Sarania Hill RF, Garbhanga RF, Rani RF) and two Wildlife Sanctuaries (Deepor Beel WLS and Amchang WLS). Deepor Beel is an internationally acclaimed wetland and also a Ramsar site and situated at the south-western boundary within the city limits. Recent assessments have revealed that Guwahati is home of around 60 species of fishes, 25 species of amphibians, 53 species of reptiles, 212 species of birds and 36 species of mammals. Out of all these species, 33 species were found to be threatened with extinction and another 62 species needs evaluation. This points out to the fact that Guwahati has a lot to offer in terms of urban biodiversity. The map showing details of eco-sensitive zones in Guwahati city is placed as **Map-3**.

Considering the facts that Guwahati City is an urban biodiversity hotspot and also space limitation for overhead lines in crowded city area, the proposed 33kV lines have been planned to be laid underground to minimize the E & S impacts to the extent possible. However, none of the proposed 33 kV underground cable lines is passing through/ located near any protected areas.

Map -3: Eco-sensitive zone of Guwahati City vis-à-vis project location



The nearest subproject from Amchang WLS is 33/11 kV UG cable from 132/33 kV Narengi S/S (existing) to 33/11 kV Bamunimaidam S/S (existing), which is at an aerial distance of approx. 1.9 km (refer to **Map-4**).

The nearest subproject from Deepar Beel WLS is 33 kV UG cable from 132/33 kV Paltan Bazaar S/S (new) to 33/11 kV Stadium S/S (existing), which is at an aerial distance of approx. 10.2 km (refer to **Map-5**).

Important Bird & Biodiversity Areas (IBAs)

Bird Life International (www.birdlife.org) has identified 55 Important Bird & Biodiversity Areas (IBAs) in Assam. These IBAs cover 815.92 sq km area, which constitute about 3.6% of the state's geographical area. Out of these 55 IBAs, only 2 IBAs i.e. Amchang Hills and Deepor Beel Bird Sanctuary falls in Kamrup (M) district. Details of the IBAs are presented below in **Table** below. Map showing location of IBAs in the district is given at **Map-2**.

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

S. No.	IBA Code	IBA Name	Criteria	Important Species	Area (sq km)
1	IN366	Amchang Hills	A1	*Leptoptilos dubius, Leptoptilos javanicus, Pelecanus philippensis, Gyps bengalensis, Gyps tenuirostris*	74
2	IN379	Deepor Beel Bird Sanctuary	A1, A4iii	*Aythya baeri, Leptoptilos dubius, Leptoptilos javanicus, Pelecanus philippensis, Calidris pygmaea, Gyps bengalensis, Gyps tenuirostris, Clanga clanga, Haliaeetus leucoryphus, waterbirds*	4.14

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

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

A1. Globally threatened species

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

A4iii. Congregatory species

Criterion: The site is known or thought to hold, on a regular basis, at least 20,000 waterbirds, or at least 10,000 pairs of seabirds, of one or more species.

The nearest subproject from Amchang Hills IBA is 33/11 kV UG cable from 132/33 kV Narengi S/S (existing) to 33/11 kV Bamunimadam S/S (existing), which is at an aerial distance of approx. 1.9 km (refer to **Map-4**). The nearest subproject from

Deepor Beel Bird Sanctuary IBA is 33/11 kV UG cable from 132/33 kV Paltan Bazaar S/S (new) to 33/11 kV Stadium S/S (existing), which is at an aerial distance of approx. 10.2 km (refer to **Map-5**).

Wetlands

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

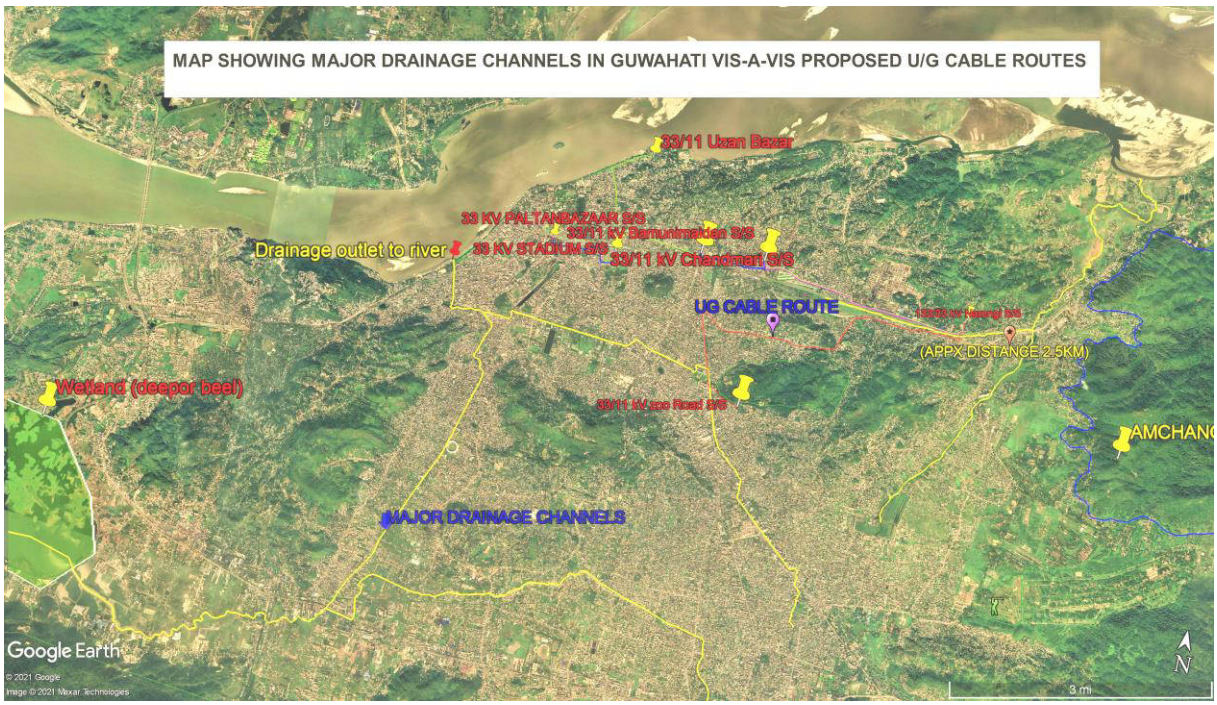
Important wetlands of the state include, Deepor beel, Dhir beel, Sareswar beel, Sone beel, Tamaranga beel and Sonai beel. Out of these, only Deepor Beel falls within the Kamrup (M) district. The nearest subproject from Deepr Beel is 33/11 kV UG cable from 132/33 kV Paltan Bazaar S/S (new) to 33/11 kV Stadium S/S (existing), which is at an aerial distance of approx. 10.2 km (refer to **Map-5**).

Map-4: Distance of Sub-Projects from Amchang WLS

Map-5: Distance of Sub-Projects from Deepar Beel WL

Drainage:

Guwahati city has overall five broad drainage basins namely Bharalu basin, Silsako Beel basin, Deepor Beel basin, Kalmoni basin and Foreshore basin. These have their own natural channels to carry excess water. These include the Bharalu-Bahini river system, Mora Bharalu river, Basistha river, Lakhimijan channel, Bondajan channel and Khanajan river. All these river systems and channels eventually drain excess water into the Brahmaputra. The Bharalu river flows through the city, is the major channel for the drainage of the city. A major chunk of the discharge from the city including waste water from households, commercial and business establishments, small and medium industries is directly channeled in Bharalu River which finally gets discharged in the main river Brahmaputra. The city of Guwahati lacks overall proper drainage system and not capable enough to handle excessive flow of water during monsoon season. The city drainage system comprises mostly covered drains with RCC slabs but also some open drains present alongside of city roads. However, several projects have been sanctioned under JNNURM scheme to take care of this problem. The nearest water body is Brahmaputra river which is approx. 2.5km from project location. The map depicting drainage channels of subproject area and nearest water body is presented below as **Map -6**.



Map -6: Major Drainage channels in Guwahati vis-à-vis Proposed U/G Cable Routes

Human and Economic Development

Assam is a state rich in natural resources like natural oil, natural gas, coal, rubber, tea and some minerals like granite, limestone and kaolin. The present state is much smaller than what it was forty years ago. It is still the largest economy in the North East. Although it is more industrially developed than the other North Eastern states, it is primarily an agrian economy with 63% of its population engaged in agriculture and allied activities.

Tea is a major industry in Assam which contributes 15 % of world's tea production and 55% of the country's tea output. A large section of the labor force of the State is employed in the tea estates of Assam. The other agricultural produce involves rice, sugarcane, pulses, potatoes and jute. The secondary sector of the economy comprises of the industries in Assam with large and medium scale productions. Agro based industries prevail in the State coupled with the tea industry that has a major contribution to the economy of the State of Assam. Assam is first State in the country where oil was struck in 1889 at Digboy. Assam has four oil refineries located at Guwahati, Digboi, Numaligarh and Bongaigaon with a total capacity of 7 MMTPA (Million Metric Tonnes per annum).The State also earns revenue from the mining industry that produces the four important industrial minerals of coal, limestone, sillimanite and oil. Important cottage industries are handloom, sericulture, manufacture of cane and bamboo articles, carpentry, smithy and manufacture of brass utensils. Assam is also the largest producer in the world of the golden colored muga silk.

Total population of Kamrup Metro district is 10,62,771 (2001 census), out of which 5,73,435 are males and 4,89,336 are females. The sex ratio of the district is 1000:835, which is lower compared to National Average. Rice is the major crop of the district, which occupies most of the cultivation area. Other major horticultural products are Orange, Pineapple, Lemon and Coconut. The district also has two tea Estates i.e. Sanarpur Tea Estate and Sunchali Tea Estate. The city of Guwahati is the capital of Assam and considered as Gateway to North-East India. Guwahati is considered as a major trade centre of Assam and entire North East. Several industries of different scales are located in the city of Guwahati. Some of the prominent ones are Guwahati Refinery of Indian Oil Corporation (IOCL), registered office of North Eastern Power Corporation Ltd (NEEPCO), Assam Petrochemical Ltd, NE Food Park Ltd, North Eastern Agricultural Marketing Corporation Ltd etc.

Additional/detailed information regarding the environmental and social features along the alignment is provided in Section- IV

SECTION - III: POLICY, LEGAL & REGULATORY FRAMEWORK

3.0 Power transmission and distribution project activities by their inherent nature and flexibility have negligible impacts on environmental and social attributes. Indian laws relating to environmental and social issues have strengthened in the last decade both due to local needs and international commitments. AEGCL/ APDCL 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.

3.1 ENVIRONMENTAL

3.1.1 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 endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country". (New Article 48A)

"It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures". (New Article 51 A(g)

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

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

(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 Assam, special provisions also have been extended to the Tribal Areas under the 6th Schedule [Articles 244(2) and 244(A) of the constitution] in addition to basic fundamental rights. The Sixth Schedule provides for administration of tribal areas as autonomous entities. The administration of an autonomous district is vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers. These institutions were expected to integrate these areas with the modern system of administration while preserving the traditional autonomy and local self-governing institutes of the tribal people. The three ADC viz. Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council in sixth schedule areas enjoy these privileges. Details of ADC in Assam are as follows;

S. N.	Autonomous District Council	Revenue District
1.	Bodoland Territorial Council	Baksha, Kokrajhar, Chirang and Udalguri
2.	Karbi Anglong	Karbi Anglong
3.	Dima Hasao	Dima Hasao

Source: North East India: Status of Governance in the Sixth Schedule Areas

3.1.2 MANDATORY REQUIREMENTS (NATIONAL/STATE)

- **GoA order/sanction under The Electricity Act, 2003:**

Sanction of GoA is a mandatory requirement for taking up any new transmission/ distribution project under the section 68(1) of The Electricity Act, 2003. The sanction authorizes AEGCL/APDCL to plan and coordinate activities to commission the new project. Electricity act does not explicitly deal with environmental implications of activities related to power transmission, distribution and construction of substation. However, AEGCL/APDCL integrates environmental protection within its project activities.

- **Forest Clearance under the Forest (Conservation) Act, 1980:**

When transmission/ distribution line projects pass through forest land, clearance has to be obtained from relevant authorities under the Forest (Conservation) Act, 1980. This Act was enacted to prevent rapid deforestation and environmental degradation. State governments cannot de-reserve any forest land or authorize its use for any non-forest purposes without approval from the Central government. AEGCL/APDCL projects, when involving forest areas, undergo detailed review and approval procedures to obtain a Forest Clearance certificate from Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India before starting any construction activity in designated forest area.

- **Environmental Clearances under Environment (Protection) Act,1986:**

Since transmission & distribution line projects are environmentally clean and do not involve any disposal of solid waste, effluents and hazardous substances in land, air and water they are kept out of the purview of Environment Impact Assessment Notification, 1994 & 2006 under The EP Act, 1986 requiring prior environmental clearance. 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 in Rajasthan and Gurgaon & Mewat in Haryana). The Aravali range, in these areas, is heavily

degraded, hence, any industrial activity there becomes critical. Environment Impact Notification, 1994 & 2006 lays down specific project categories that require clearance from MoEFCC Power transmission and distribution projects are not included in this list.

- **Ozone Depleting Substances (Regulation and Control) Rules, 2000 :**

MoEFCC vide its notification dated 17th July, 2000 under the section of 6, 8 and 25 of the Environment (Protection) Act, 1986 has notified rules for regulation /control of Ozone Depleting Substances under Montreal Protocol adopted on 16th September 1987. As per the notification certain control and regulation has been imposed on manufacturing, import, export and use of these compounds. AEGCL/APDCL shall follow provisions of notification and phase out all equipments which uses these substances and planning to achieve CFC free organization in near future.

- **Batteries (Management and Handling) Rules, 2001:**

MoEFCC vide its notification dated 16th May, 2001 under the section of 6, 8 and 25 of the Environment (Protection) Act, 1986 has put certain restriction on disposal of used batteries and its handling. As per the notification it is the responsibility of bulk consumer (AEGCL/ APDCL) to ensure that used batteries are not disposed of, in any manner, other than by depositing with the dealer/manufacturer/registered recycler/importer/reconditioner or at the designated collection centres and to file half yearly return in prescribed form to the concerned State Pollution Control Board.

- **Hazardous Wastes (Management and Transboundary Movement) Rules, 2016 :**

Vide notification dated 4th April, 2016 under the EPA, 1986, MoEFCC notified rules for environmentally sound management of hazardous wastes to ensure that the hazardous wastes are managed in a manner which shall protect health and the environment against the adverse effects that may result from such waste. The used transformer oil and their tank bottom sludge has been declared as hazardous wastes vide this notification.

AEGCL/ APDCL, being an occupier of transformer oil shall comply with the provisions of the said rules (MoEFCC notification dated 4th April 2016) if the practice of storing of used oil is maintained. In case it is decided to outsource the process of recycle of used oil to registered recycler as per the provisions of notification then AEGCL/ APDCL shall submit the desired return in prescribed form to concerned State Pollution Control Board at the time of disposal of used oil.

- **E-waste (Management and Handling) Rules, 2011:**

Vide notification dated 12th May 2011 under the EPA, 1986, MoEFCC notified rules for environmentally sound management of e-waste to ensure that e-waste are 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. Thus, it is the responsibility of the bulk consumer (AEGCL/APDCL) 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. AEGCL/APDCL, being a bulk consumer of electrical and

electronics equipments shall maintain the record as per Form-2 for scrutiny by State Pollution Control Board.

- **The Biological Diversity Act, 2002:**

Under the United Nations Convention on Biological Diversity signed at Rio de Janeiro on the 5th June, 1992 of which India is also a party, MoEFCC has enacted the Biological Diversity Act, 2002 to provide for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith. As per the provision of act certain area which are rich in biodiversity and encompasses unique and representative ecosystems are identified and designated as Biosphere Reserve to facilitate its conservation. All restrictions applicable to protected areas like National Park & Sanctuaries are also applicable to these reserves. AEGCL/APDCL will abide by the provision of act wherever applicable and try to totally avoid these biosphere reserves while finalizing the route alignment.

- **The Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006:**

This act recognizes and vests the forest rights and occupation in forest land to forest dwelling. Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recognized.

The definitions of forest dwelling schedule tribes, forestland, forest rights, forest villages, etc. have been included in Section 2 of the Act. The Union Ministry of Tribal Affairs (MoTA) is the nodal agency for implementation of the Act while field implementation is the responsibility of the government agencies. Its implementation has also been linked with forest clearance process under Forest (Conservation) Act, 1980 w.e.f. August 2009 by MoEFCC. AEGCL/APDCL shall abide by the provisions of the act if any portion of the transmission line is passing through forest land, in occupation of the forest dwelling scheduled tribes and other traditional forest dwellers for laying of transmission lines. However, for linear projects including transmission lines obtaining of NoC from the gram sabha has been exempted for the requirement of FRA compliance as per MoEFCC circular dated 5th February 2013.

- **Assam control of Tree Felling Rules, 2002:**

These rules prescribe how tree plantations raised in non-recorded forest areas by individuals or institutions are to be governed. They specify which plantations need to be registered, which tree species do not require felling permission, what process is to be followed in order to fell trees outside non-recorded forest areas, how is the transit of timber originating from non-recorded forest areas regulated and how and why timber can be confiscated to the Government. AEGCL/APDCL follows all provisions of this rule for felling of trees from non-forest land.

3.1.3 FUNDING AGENCY:

For AEGCL/ APDCL, mandatory environment requirements with respect to WB Operational Policies (OP) are as follows:

- **World Bank (WB) OP 4.01**: **Environmental Assessment**

The policy objective is to ensure the environmental and social soundness and sustainability of investment projects and support integration of environmental and social aspects of projects in the decision-making process.

AEGCL/APDCL takes remedial measures to prevent, minimize, mitigate, or compensate for adverse impact and improve environmental performance. Environment Assessment will take into account the natural environment, human health and safety, and social aspects and trans- boundary and global environmental aspects. During EA process public is also informed at every stage of project execution and their views are considered during decision-making process. Accordingly, in the present case E & S aspects of the project have been assessed and integrated into management procedures.

- **World Bank OP 4.04: Natural Habitats**

The policy objective is to promote sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions. However, this policy will not trigger the instant project as it does not involve any natural habitats such as biodiversity area, protected area, sacred groves etc.

- **World Bank OP 4.11: Physical Cultural Resources**

The policy objective is 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. This policy is not applicable as the present project does not encroach upon any such resources.

- **World Bank OP 4.36: Forests**

The objective of this policy is 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. This policy is not applicable as the present project does not involve any forest area.

3.2 SOCIAL

3.2.1 CONSTITUTIONAL PROVISIONS

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. AEGCL/APDCL shall implement the said constitutional provision in true sprit to fulfill its environmental and social obligations and responsibilities.

3.2.2 MANDATORY REQUIREMENTS (NATIONAL/STATE)

- **The Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013 (RFCTLARRA) :**

Govt. of India replaced the old Land Acquisition Act, 1894 and notified the new RFCTLARRA, 2013 which came into force from 1st January 2014. This act ensures appropriate identification of the affected families/households, fair compensation and rehabilitation of titleholders and non-titleholders. However, the new act i.e. RFCTLARRA, 2013 authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land including Social Impact Assessment (SIA), Action Plan for R&R (i.e. Rehabilitation and Resettlement) & its implementation and the AEGCL/ APDCL responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation. Since, construction of distribution lines do not require acquisition of land as per existing law of land, applicability of this law is not envisaged in this case.

- **Rights of Way and Compensation under Electricity Act, 2003:**

The Electricity Act, 2003 has a provision for notifying transmission company under section 164 (B) to avail benefits of eminent domain provided under the Indian Telegraph Act, 1885. Under this section AEGCL/ APDCL may seeks for GoA authorisation to exercise all the powers that the Telegraph authority possesses and can spot, construct and erect towers without acquiring the land. Moreover, all damages due to its activity shall be compensated at market rate. In case of agricultural or private land the provisions of section- 67 and or section-68 (5 & 6) of the Electricity Act, 2003 and section-10 of the Indian Telegraph Act, 1885 are followed for assessment and payment of compensation towards such damages.

Besides, Ministry of Power guidelines of 15th Oct'15 provides land compensation cost @ 85% of tower base and @ 15% of line corridor. Accordingly, Govt. of Assam vide its notification dated 10th March 2017 adopted the said guidelines for implementation with same compensation provisions which is applicable to transmission lines supported by tower base of 66 kV and above only. Since all the subproject components are 33kv lines, this guideline is not applicable in the present project.

3.3 FUNDING AGENCY

For AEGCL/ APDCL, mandatory social requirements with respect to WB Operational Policies are as follows:

- **World Bank 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. However, this policy is

not applicable in the instant case as there is no involvement of involuntary resettlement.

- **World Bank OP 4.10: Indigenous People (IP)**

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. However, this policy is not applicable in the instant case as there is no IP involved.

3.4 ADDITIONAL REGULATORY REQUIREMENTS SPECIFIC TO THE PROPOSED 33 KV UG PROJECT IN GUWAHATI

3.4.1 Approval of the U/G cable routes from State Utility i.e. APDCL:

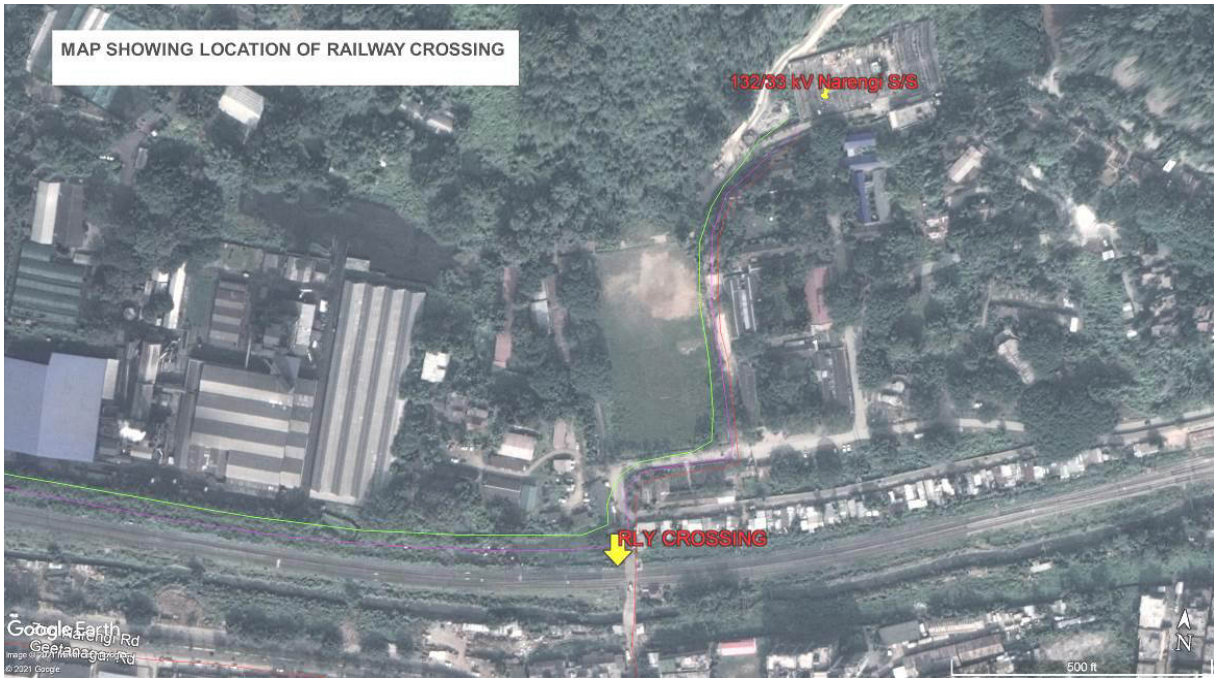
As Implementing Agency, POWERGRID was involved in the activities of preliminary/walkover route survey and selection of the final route after exploring all the possible alternatives. However, the owner of the project i.e. APDCL was also involved by POWERGRID through joint survey/inspection along the proposed route before finalization. Subsequently, approval on the final route maps were duly obtained from APDCL as a standard work practice followed in NERPSIP.

3.4.2 Approval from PWD, Roads:

Since, the 33kV UG cable laying project will be executed along the existing PWD roads and excavation for inspection/entry pits for horizontal deviational drilling will partially damage the road structure, therefore, necessary permission from PWD Authority is required to be obtained prior to execution of work. The PWD officials after thorough inspection of routes and damage assessment submits necessary estimate to APDCL for restoration of the road which are required to be deposited to PWD. Subsequently, the necessary permission is granted to APDCL for starting of work.

3.4.3 Approval from Railway Authority:

Since, the 33kV UG cable laying project will involve one (1) no. Rly track under crossing at Narangi, (*as shown below*) therefore, necessary permission is required to be obtained from Railway Authority. After submission of detail plan & drawing for the proposed crossing location, the Railway authority will estimate the way-leave charges against the work and accordingly submit an estimate to APDCL. After depositing the way leave charges, necessary permission will be granted to APDCL for execution of the work. Moreover, for any UG cabling work falling in the ROW of Rly authority will require prior permission which will be obtained by POWERGRID on behalf of APDCL.



3.4.4 Intimation to local regulatory authority and Project affected person (PAP)

Although, the 33kV UG cable laying project will be executed along the existing PWD roads, but there will be temporary hindrance to the local inhabitants/shopkeepers/any other dwellers in proximity to the project site during the execution stage. Moreover, there are chances of temporary restriction to traffic flow and any local dispute arising from during project execution. Therefore, due diligence needs to be given by POWERGRID/APDCL, so that they are least affected by the project activity. Moreover, free prior intimation to the PAPs need to be provided by POWERGRID/APDCL prior to start of work. Further, the local regulatory authority like nearby police station/traffic department are required to be intimated in advance with proposed work plan in the area.

SECTION IV: APPROACH FOR ROUTE/SITE SELECTION

4.0 ROUTE SELECTION - (ASSESSMENT & MANAGEMENT PROCESS)

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

While identifying the transmission/ distribution system, preliminary route selection is done by AEGCL/APDCL 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 completely avoid the forest involvement or to keep it to the barest minimum, whenever unavoidable. In the instant case of 33 kV underground cable routes, which are to be laid along the existing PWD roads mainly in urban areas, the major factors considered for route selection are Right of Way, prior consent from regulatory authorities, traffic load etc.

4.1 STUDY OF ALTERNATIVES

4.1.1 ENVIRONMENTAL CRITERIA FOR ROUTE SELECTION

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

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

The line routes will minimize the number of crossings of rivers/railway lines, national and state highways, overhead high voltage power lines, other communication lines, In order to achieve this, AEGCL/APDCL undertakes route selection for individual transmission and distribution lines in close consultation with representatives of concerned Forest Department and the revenue authority, urban local body/Municipality . Although under the law, AEGCL/APDCL 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 underground public utilities like water supply, sewer, gas pipelines, telecom/optical fiber etc. .

- 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 environmental and social sensitive areas etc. Keeping above in mind the routes of proposed UG line under the project have been so aligned that it takes care of above factors. As such different alternatives for line were studied with the help of Govt. published data like Forest atlas, Survey of India 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.

4.2 ROUTE SELECTION FOR 33 kV UNDERGROUND CABLE

The details of the 5 no. of underground cable routes proposed under the additional scope of NERPSIP, Assam (under Pkg-DMS-4) is as below:

S.N.	Name of the 33 kV U/G cable line	Length (Km)
1	132/33kV Narengi S/S to 33/11 kV Bamunimaidan substation	4.419
2	33/11kV Bamunimaidan S/S to 33/11 kV Chandmari substation	1.482
3	132/33 kV Narengi S/S to 33/11 kV Zoo Road substation	8.798
4	132/33 kV Narengi S/S to 33/11 kV Uzan Bazaar substation	9.134
5	132/33 kV Paltan Bazar to 33/11 kV Stadium	1.6

Based on walkover survey/Topographic map/Google map analysis and information from site, the length of distribution lines ranges from approximately 1.5 km to 9 km. Since these lines proposed to be laid underground connecting two respective substations in the city by the sides of existing PWD roads and intended for providing power supply to predestined areas, their environmental and social impact would be negligible. Hence alternative analysis studies for these lines are not required /conducted. The details of land use of sub-project location is placed as **Exhibit-1-3**. Moreover, these lines do not involve any forest/protected area that may require such studies. All the additional 5 nos. UG cable routes are proposed to be laid along shoulder of the existing major PWD state roads of Guwahati already having adequate road width (*varies from 15 mtr. to 30 mtr.*) so that the drilling activity does not hamper the regular flow of traffic. Details of road network with available width in Guwahati city is placed as **Exhibit-4-6**. All the termination points of the UG cable route with the existing substations and approximate road width etc. are shown in photographs placed below. Based on preliminary/walk over survey, feasible route alignment for these lines is marked on **Exhibit-7-11.**

4.3 ASSOCIATED SUBSTATIONS:

The associated substations of the 33 kV U/G cable subprojects except 132 kV Paltanbazaar GIS (*developed under NERPSIP*) are already existing and owned by APDCL and even not required to be augmented under this present scope of works. The location of the associated substations vis-à-vis the U/G cable routes and termination point are shown as below:

1. 132/33 kV NARANGI SUBSTATION

2. 33/11 kV BAMUNIMAIDAM SUBSTATION

3. 33/11 kV ZOO ROAD SUBSTATION

4. 33/11 kV CHANDMARI SUBSTATION

5. 33/11 KV UJAN BAZAAR SUBSTATION

6. 132/33 KV PALTAN BAZAR

SECTION – V: POTENTIAL ENVIRONMENTAL IMPACT, THEIR EVALUATION AND MANAGEMENT

5.0 IMPACT DUE TO PROJECT LOCATION AND DESIGN

Environmental impacts of Transmission & Distribution (T & D) projects are not far reaching and are mostly localized to RoW. However, T & D projects have some effects on natural and socio-culture resources which can be minimized through careful route selection. Moreover, in the instant project the proposed lines are to be constructed underground along the existing PWD roads, thus, further minimizing the adverse environmental & social impacts. In order to get latest information and further optimization of route, modern survey techniques/tools like GIS, GPS are 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 mitigative measures including engineering variations depending upon the site situation/location. In the instant scheme also these techniques are used and detail survey using GIS/GPS is under progress. Although, all possible measures have been taken during the finalization of route alignment for the proposed lines but due to peculiarity of terrain and demography of the area where subproject is being implemented, some environmental impacts may be there. The explanations in brief with regard to specific environment review criteria based on preliminary survey are as follows:

(i) Resettlement

The scope of work covered under the present IEAR does not involve construction of substation. Further, in respect of distribution line, land for laying underground cable is not acquired as per existing law of land. Hence, no physical displacement or R & R issue envisaged in instant project.

The project is implemented in the Kamrup Metro district which is not a part of areas covered under sixth schedule (refer para-20 of ESPPF) still *all social issues shall be dealt separately in accordance with the provisions of* ***Social Management Framework[1] (SMF, A-C),*** *placed in the ESPPF of AEGCL/APDCL*.

(ii) Land value depreciation

It is evident that electric power being an enabler sector acts as a catalyst for the growth and development of areas having accessibility to it. Based on past experience land prices are generally expected to rise in the areas receiving power. Moreover, in the instant case, proposed lines are to be constructed underground which will further minimize pressure/impact on land. Therefore, the value of land will not be adversely affected to a significant degree. However, distribution lines are primarily intended to provide power supply to populated area which will boost the economic status as well as land price of the area, thus, outweighing possible negative impacts, if any.

[1] SMF has 3 main elements: One, RAP for involuntary land acquisitions; Two, CPTD for poles/ towers; and Three, Tribal People Development Framework

(iii) **Monuments of Historical/cultural 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 the State Revenue authorities/ the Urban local body and Archaeological Survey of India (ASI), no such monuments are coming in the proposed route alignments. Moreover, utmost care shall be taken during detailed survey to avoid such areas. However, during excavation, if any treasure, archaeological artifacts are found the same shall be intimated in writing to Collector/Archaeology department as per the provisions of Section-4 of "Indian Treasure Trove Act, 1878 as amended in 1949". The Collector shall initiate further action for its safe custody or its shifting to Treasury/ Secure place. The construction activity may be suspended temporarily during this process.

(iv) **Lines into precious ecological areas**

As already explained all precautions have been taken to avoid routing of line through forest and protected areas like national park/sanctuaries. In the instant case also the route of these lines have been aligned along the existing PWD roads and no forest area involvement along the corridors.

(v) **Lines into other valuable lands**

Since, the instant project is being implemented in the city area of Guwahati any adverse impact on agricultural land is not envisaged. The proposed lines will be laid underground along the city roads/existing power corridors and open area where adequate width is already available, hence, minimizing the adverse effects, if any. Further, for laying underground cable land is not acquired as per existing law. However, there will be only temporary hindrance to the local inhabitants/shopkeepers/any other dwellers in proximity to the project site during the execution stage. Some images of the project area depicting available width for laying cable is presented below.

(vi) **Interference with other utilities and traffic**

As per regulations, it is mandatory to seek clearance prior to construction from department of Railways, Telecommunications, Aviation authorities etc., wherever necessary that are likely to be affected by the construction of transmission & distribution lines.

In the instant case since proposed distribution lines are to be laid underground, possibility of electrical interference is not envisaged. As regard interference of drainage, water supply and other utilities it may be noted that due to difficulty in getting data of existing u/g utilities which are being maintained by other govt/private agencies, the proposed underground drilling operation is planned below 2/3 mtr from existing road level to avoid interference with these existing utilities, Besides, prior to pulling of HDPE pipe/cable, a small diameter pilot hole is drilled along a directional path from one surface point to another which enables the executing agency to visualize any obstruction along the proposed UG route. In case there is some obstruction is found the drilling path is changed to obtain a clear way for the cable laying.

However, following clearance /permission from relevant authorities shall be obtained before start of work.

a) Approval from PWD

The 33 kV UG cable will be laid along the existing PWD roads and excavation for inspection/entry pits for horizontal deviational drilling will partially damage the road structure. Therefore, necessary permission from PWD Authority is required to be obtained prior to execution of work. The PWD officials after thorough inspection of routes and damage assessment submits necessary estimate to APDCL for restoration of the road which are required to be deposited to PWD. Subsequently, the necessary permission is granted to APDCL for starting of work.

b) Approval from Railway Authority

Since, the 33 kV UG cable laying project will involve one (1) rail track under crossing at Narangi necessary permission is required to be obtained from Railway Authority. After submission of detail plan & drawing for the proposed crossing location, the railway authority will estimate the way-leave charges against the work and accordingly submit an estimate to APDCL. After depositing the way leave charges, necessary permission will be granted to APDCL for execution of the work. Moreover, for any UG cabling work falling in the RoW of railway authority will require prior permission which will be obtained by POWERGRID on behalf of APDCL.

c) Intimation to Local Authority and Project Affected Person (PAP)

Although the 33 kV UG cable laying project will be executed along the existing PWD roads, but there will be temporary hindrance to the local inhabitants/shopkeepers/any other dwellers in proximity to the project site during the execution stage. Moreover, there are chances of temporary restriction to traffic flow and any local dispute arising from during project execution. Accordingly, free prior intimation to the PAP will be given by site officials of POWERGRID/APDCL prior to start of work. Also, the local regulatory authority like nearby police station/traffic department are required to be intimated in advance with proposed work plan in the area.

(vii) **Interference with drainage pattern**

Since underground cable will be laid along the existing PWD roads through horizontal deviational drilling machine and inspection pit of dimension (2 x 2 x 3) m^3 will be dug along the proposed route at an average distance of 100 meter there may

be temporary hindrance to drainage for which adequate care will be taken to minimize the blockage by proper diversion of its flow. Although, dewatering is not envisaged at most places, dewatering pump will be deployed to facilitate construction, if any, water seeps from local surface drains.

5.1 ENVIRONMENTAL PROBLEMS DUE TO DESIGN

(i) Escape of polluting materials

The equipments installed on lines and substations are static in nature and do not generate any fumes or waste materials. However, during horizontal drilling process a significant volume of mud/slurry (approx.1616 m^3) will be generated which need to be disposed properly to designated disposal sites. Apart from this solid waste like packing materials, cable drum, sand, aggregate material, cements etc. generated during construction is carefully handled and removed from site.

(ii) Explosion/fire hazards

During the survey of line route, it is ensured that these are kept away from oil/gas pipelines and other sites with potential for creating explosions or fires. The underground cables, by its nature do not result in fire hazard, except for developing a fault in terms of puncture in the insulation, leading to direct earthing, which in turn trips the circuit breaker (either earth fault relay/over current relay/short circuit relay) at the respective substation within milliseconds. Hence, possibility of fire hazard is not anticipated.

(iii) Erosion hazards due to inadequate provision for resurfacing of exposed area

As already explained in preceding para, construction of 33 kV underground lines will be carried out through horizontal deviational drilling (HDD) machine and inspection pit of dimension (2 x 2 x 3) m^3 will be dug along the proposed route at an average distance of 100 meter. Accordingly, it is estimated that approx. 3216 m^3 (268 pits X 12m^3) of excavated materials will be generated for construction of total 26.8 kms of UG lines. However, most of these excavated materials (about 80-90%) will be used for re-filling and resurfacing after construction work is over and any remaining soil shall be disposed off to designated place or nearby low-lying areas at the consent of the owner.

(iv) Environmental aesthetics

Since the proposed lines will be laid underground there won't be any adverse impact on visual aesthetics of the localities.

(v) Noise/vibration nuisances

Construction works particularly during drilling activity has the potentiality to generate noise and vibration higher than the background noise. Though construction activities are to be undertaken in city area where noise levels are already at higher side measures like scheduling of activities during lean traffic period or at night, use of low noise producing equipment, provisions of sound and vibration dampers etc. will be taken care to minimize any direct impact to surrounding community.

(vi) **Blockage of Wildlife passage**

The proposed distribution lines are to be laid underground in city area along the existing roads/power corridors and open spaces. Hence, no such impacts including bird hit/electrocution are envisaged due to instant project.

5.2 ENVIRONMENTAL PROBLEMS DURING CONSTRUCTION PHASE

(i) **Uncontrolled silt runoff**

As already explained, during construction limited quantity of excavated material will be generated from inspection pits and horizontal drilling process for laying of underground cables. However, adequate measures shall be taken to store excavated materials properly for refilling/resurfacing after construction is over. Since the project activity is confined to city boundaries which is plane area, no such impact is envisaged.

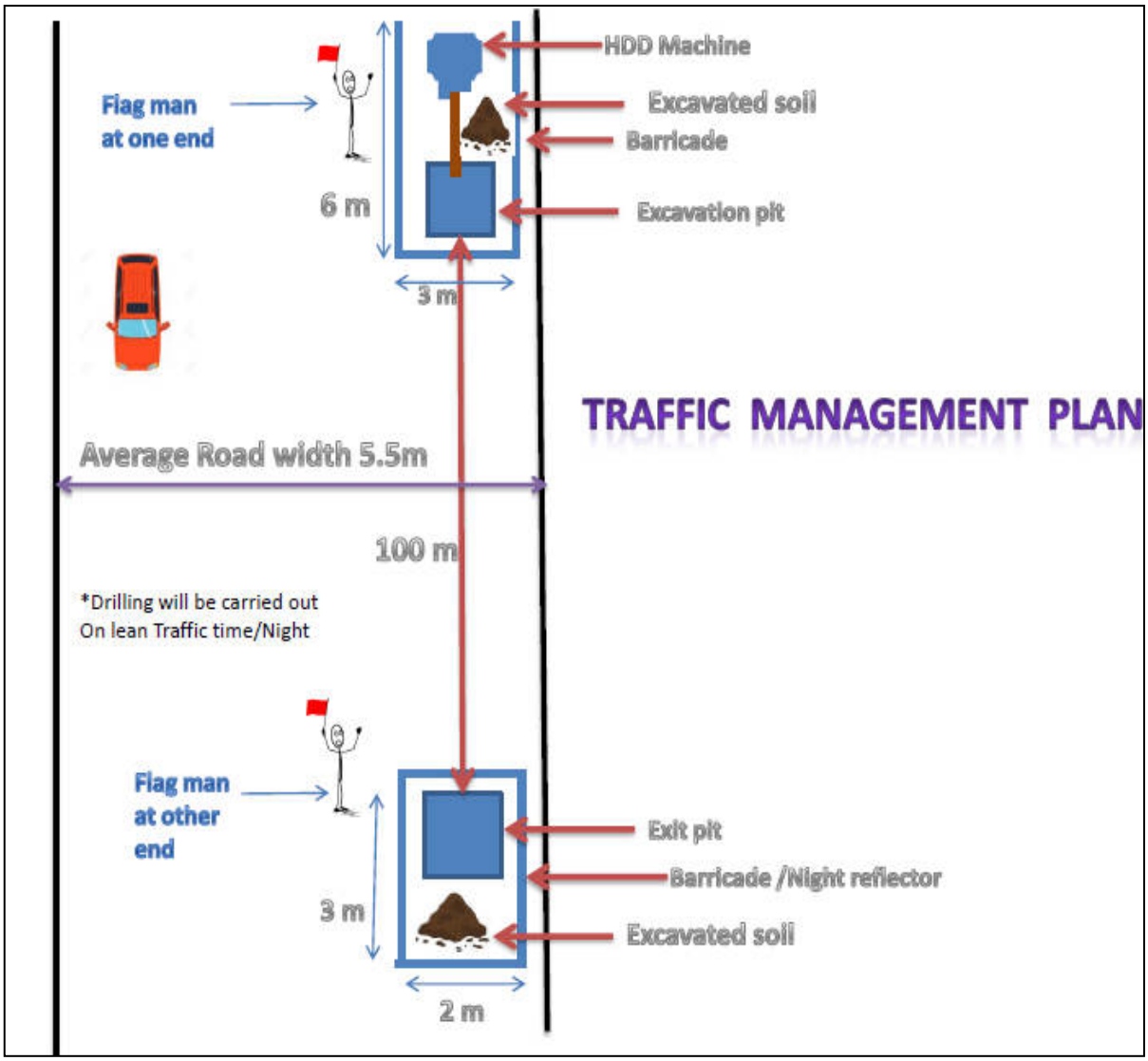
(ii) **Nuisance to nearby properties**

Since laying UG cable is proposed along the existing PWD roads, there will be possibility of temporary hindrance to the local inhabitants/shopkeepers/any other dwellers in proximity to the project site during the execution stage. Further, there are chances of temporary restriction to traffic flow during project execution. In such cases, prior intimation to the PAP will be provided by site officials of POWERGRID/APDCL prior to start of work. Moreover, any adverse impact arising during the construction will be temporary and no significant impact nearby habitat/property of neighboring community is anticipated apart from damage to road.

(iii) **Interference with utilities and traffic and blockage of access way**

As already explained in preceding paras, as laying of UG cable is proposed along the existing PWD roads in city area there will be temporary restriction to traffic flow during construction/drilling activity. Further, there may be some temporary hindrance to the local inhabitants/shopkeepers/any other dwellers in proximity to the project site during the execution stage. However, prior intimation to the PAP will be provided by site officials of POWERGRID/APDCL prior to start of work. Further, all safety measures related to underground cable laying and installation are included in bidding document (Refer Sec VI, chapter 03 & Sec IV, chapter 15 of Technical specification respectively). Cable markers with danger sign shall be installed to indicate the location of all underground power cables to avoid any unforeseen incident during operation phase.

Besides, approval and permission from the Guwahati Traffic Department based on site specific traffic management plan will be mandatorily obtained prior to execution of work. Traffic regulators like roper barricading around the pit, flag man to be placed at both ends and HDD machine, traffic diversion sign boards, night reflector to be placed during night time etc. shall be undertaken to avoid any unforeseen incident/hindrance to the movement of traffic. Also help of local regulatory authority like nearby police station/traffic department during such activity is being sought. A schematic of traffic management is placed below. A detailed site-specific Traffic Safety guidelines/ precautions along with methodology of work being implemented at site by construction contractor is placed as **Appendix-1.** A schematic of traffic management is placed below.



Work Being carried Out During Night Time

(iv) **Inadequate resurfacing for erosion control**

Since the proposed project being implemented in city area which is also plane area without any major excavation/earth cutting erosion shall not be an issue. Moreover, excavated earth will be reused for refilling/resurfacing immediately after construction is over.

(v) **Inadequate disposition of borrow area**

Since, proposed lines are to be constructed underground, the volume of excavated soil will be fully utilized for back filling and resurfacing. Hence acquisition/opening of borrow area is not needed.

(vi) **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. 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 Rs1.0 lakh/each for any injury and is deducted from the contractor’s payment and paid to the deceased/affected family.

AEGCL/APDCL maintains safety as a top priority and has framed guidelines/checklist for workers’ safety as its personnel are exposed to live EHV apparatus and transmission/distribution lines. These guidelines/checklists include work permits and safety precautions for work on the transmission/distribution lines both during construction and operation and are regularly monitored by site in-charge. 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 will be made available with the labour gangs, and doctors called in from nearby towns when necessary. The number of outside (skilled) labourers will be quite small, of the order of 25-30 people per group and remaining workforce of unskilled labourers will be comprised of mostly local people. As per policy/norms preference shall be given to the eligible local labor having required skills a specific clause has been incorporated in contract conditions (refer clause- 22.2.1 of GCC) for compliance of same by Contractor. 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 will be disinfected regularly if required. In order to minimize/checking of spread of socially transmitted diseases e.g. HIV/AIDS etc. AEGCL/APDCL will conduct awareness building programs on such issues for the construction workers.

(vii) **Waste management specific to Underground Cabling**

During construction limited quantity of excavated material will be generated from inspection pits and horizontal drilling process for laying of underground cables.

However, adequate measures shall be taken to store excavated materials properly for refilling/resurfacing after construction is over. Further, slurry generated during drilling process shall be collected & transported in sealed trolley/tanker to the designated disposal sites or disposed to nearby low-lying areas with due consent from the owner. The detailed safeguard management practices specific to Underground cabling and relevant waste management practices are delineated at **Appendix-2.**

5.3 ENVIRONMENTAL PROBLEMS RESULTING FROM OPERATION

(i) O&M Staff/Skills less than acceptable resulting in variety of adverse effects

The O& M program is normally implemented by substation personnel for both the lines as well as substations. Monitoring measures employed include patrolling and thermo-vision scanning.

The supervisors and managers entrusted with O&M responsibilities are intensively trained for necessary skills and expertise for handling these aspects. A monthly preventive maintenance program will be carried out to disclose problems related to cooling oil, gaskets, circuit breakers, vibration measurements, contact resistance, condensers, air handling units, electrical panels and compressors. Any sign of soil erosion is also reported and rectified. Monitoring results are published monthly, including a report of corrective action taken and a schedule for future action.

AEGCL/APDCL follows the best international practices while designing its system to maintain acceptable prescribed EMF level. The ICNIRP guideline for acceptable EMF level for the general public (up to 24 hours a day) is a maximum exposure level of 1,000 mG or 100 μT. Further, because of health and safety issues such as fire safety, safe voltages on metallic parts of buildings, and safety clearances to avoid flashover, and as such the potential for EMF effects to occur will be further diminished.

5.4 CRITICAL ENVIRONMENTAL REVIEW CRITERIA

(i) Loss of irreplaceable resources

In the instant project distribution lines are to be constructed underground, thus, there will be no loss of land. Moreover, the subject lines are not passing through any forest area; hence the problem of losing natural resources is not envisaged.

(ii) Accelerated use of resources for short-term gains

The subprojects will not be making use of any natural resources occurring in the area during construction as well as maintenance phases. The construction material such as UG Cable, HDPE Pipe, cement etc. shall come from factories while the excavated soil shall be used for backfilling to the extent possible to restore the surface. During construction of line, very small quantity of water is required which is met from nearby existing source or through takers. Hence, it may be seen that the activities associated with implementation of subject project shall not cause any accelerated use of resources for short term gain.

(iii) **Endangering of species**

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

(iv) **Promoting undesirable rural-to urban migration**

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

(v) **Safety hazard associated with submergence of pit due to flooding;**

The XLPE Underground cable used in the instant project is so designed that it can operate under extreme weather conditions like flooding. As long as water does not extend to the exposed terminations, there is very little risk of failure or safety hazard due to flooding/submergence of pit Further, these underground cables, by its nature do not result in fire hazard, except for developing a fault in terms of puncture in the insulation, leading to direct earthing, which in turn trips the circuit breaker (either earth fault relay/over current relay/short circuit relay) at the respective substation within milliseconds.

5.5 PUBLIC CONSULTATION:

Public consultation/information is an integral part of the project implementation. Public is informed about the project at every stage of execution. During survey also AEGCL/ APDCL site officials meet people and inform them about the routing of distribution lines. During the construction, every individual who are directly or indirectly affected due to project intervention will be consulted. Apart from this, public consultation using different technique like Public Meeting, Small Group Meeting, informal Meeting shall also be carried out during different activities of project cycle. During such consultation the public are informed about the project in general and in particular about the following:

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

Since temporary hindrance due to proposed project intervention is anticipated, regular communication/meeting involving one to one interaction with local inhabitants/ shopkeepers/other dwellers shall be carried out to disseminate information about project and adoption of EHS mitigative measures to be

undertaken. Further, prior intimation to the affected persons will be provided by site officials of POWERGRID / APDCL before to start of work. The process of such meeting/consultation shall continue during project implementation and even during O&M stage.

Information Dissemination to Street Vendor/Public along UG Cable Route

5.6 CONCLUSION

It is clear from the above discussion that apart from some temporary hindrance with respect to accessibility and traffic during construction activity the environmental and social impacts associated with the project intervention will be minimal/insignificant. Moreover, with the implementation of traffic management plan as well as other mitigation measures as suggested in EMP will further reduce/ minimize the possible impacts, if any. Additionally, selection of optimal route avoiding environmentally and socially sensitive area and by making the lines UG in congested city area of Guwahati has further enhanced the environmentally sustainability of the project. Power being an enabler factor, availability of reliable power will strengthen the basic infrastructure in the area, which is essential for development of the area.

SECTION – VI: PROJECT IMPLEMENTATION ARRANGEMENT & MONITORING

6.0 ADMINISTRATIVE ARRANGEMENT FOR PROJECT IMPLEMENTATION

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

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

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

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

6.1 REVIEW OF PROJECT IMPLEMENTATION PROGRESS:

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

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

of the meeting will be shared with all concerned and if required, with GoI and The Bank.

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

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

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

6.2 ENVIRONMENTAL MONITORING IN UTILITY:

Monitoring is a continuous process for AEGCL/APDCL projects at all the stages, be it the site selection, construction or maintenance.

The success of AEGCL/APDCL 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 Managing Director of the Corporation. The progress of various on-going projects is also informed to the Board of Directors.

AEGCL/APDCL has formed a separate cell at the corporate office level namely Environment and Social Management Cell (ESMC) headed by Director PMU for proper implementation and monitoring of environmental & social management measures. AEGCL/APDCL organization support structure with arrangement for ESPPF implementation is depicted in **Exhibit-1.** Key responsibilities of the ESMC are follows:

- Coordinating environmental and social commitments and initiatives with various multilateral agencies, GoA and MoEFCC.
- 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 MoEFCC for expediting forest clearances
- Training of Circle and Site officials on E&S issues arising out of Transmission/ Distribution projects and their management plan.
- Training of other departments to familiarize them with the ESPP document.

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. As no forest area is involved in the instant project such monitoring/provision shall not be applicable to proposed project. A detailed Environment Management Plan (EMP) including monitoring plan for all possible environmental and social impact and its proper management & monitoring has been drawn (**Table- 6.1**) and will be implemented during various stage of project execution.

6.3 GRIEVANCE REDRESSAL MECHANISM (GRM)

Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing/resolving the concern and grievances in a transparent and swift manner. Many minor concerns of peoples are addressed during public consultation process initiated at the beginning of the project and broadly outlined in Annexure-23 of ESPPF. For handling grievance, AEGCL/APDCL has already a framework in place. To ensure its implementation, Grievance Redress Committee (GRC) will be established at two places, one at the project/scheme level and another at Corporate/HQ level. The GRCs shall include members from AEGCL/APDCL, Local Administration, Village Council/Panchayat Members, Affected Persons representative and reputed persons from the society and representative from the autonomous districts council in case of tribal districts selected/decided on nomination basis under the chairmanship of project head. The composition of GRC shall be disclosed in Panchayat/Village council offices and concerned district headquarter for wider coverage.

The complainant will also be allowed to submit its complaint to local project official who will pass it to GRC immediately but not more than 5 days of receiving such complaint. The first meeting of GRC will be organized within 15 days of its constitution/disclosure to formulate procedure and frequency of meeting. However, GRC meeting shall be convened within 15 days of receiving a grievance for its solution. GRC endeavor will be to pronounce its decision/ may also refer it to corporate GRC for solution within 30-45 days of receiving grievances. In case complainant/appellant is not satisfied with the decision of GRC they can approach AEGCL/APDCL Corporate level Committee /District Collector or Court of law for solution.

The corporate level GRC shall function under the chairmanship of Director (PMU) who will nominate other members of GRC including one representative from

corporate ESMC who is conversant with the environment & social issues. The meeting of Corporate GRC shall be convened within 7-10 days of receiving the reference from project GRC or complainant directly and pronounce its decision within next 15 days.

6.4 ENVIRONMENTAL REVIEW :

Periodic review by higher management including review by Heads of SPCU and CPIU for all environmental and social issues will be undertaken to ensure that EMP and other measures are implemented at site for compliance of agreed policy and management plan.

Table- 6.1: ENVIRONMENT MANAGEMENT PLAN

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
1	Location of underground lines alignment & design	Change in land use and exposure to safety related risks	Setback of dwellings to line route designed in accordance with permitted level of power frequency & regulation of supervision at sites.	Selection of line alignment with respect to nearest dwellings	Setback distances to nearest houses – once	Implementing Agency (IA)	Part of detailed sitting and alignment survey /design
			Careful route selection to avoid existing settlements/ structure and sensitive locations	Selection of line alignment (distance to nearest dwellings or social institutions)	Consultation with local authorities/ land owners – once		
			Careful selection of site and route alignment to avoid encroachment of socially, culturally and archaeological sensitive areas (i. g. sacred groves, graveyard, religious worship place, monuments etc.)	Selection of line alignment (distance to sensitive area)			
			Appropriate route selection/siting of cable to avoid channel interference and also avoid road, railway crossings- as far as possible.	Selection of line alignment (distance to nearest drainage	Consultation with local authorities and design engineers – once		
2.	Line through Forest/Protected areas/ precious ecological area	Loss of precious ecological values/ damage to precious species	Avoid locating lines in forest land and other environmental sensitive areas by careful site and alignment selection	Selection of line alignment (distance to nearest designated forest/ protected areas/ other ecological sensitive areas)	Consultation with local forest authorities and design engineers - once	IA	Part of detailed siting and alignment survey /design
			Avoid siting of lines through such areas by careful site and alignment selection (National Parks, Wildlife Sanctuary, Biosphere Reserves/ Biodiversity Hotspots)				

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Obtain statutory clearances from the Government	Statutory approvals from Government	Compliance with regulations – once for each		
			Minimize the need by using RoW wherever possible	Selection of line alignment	Consultation with local authorities and design engineers - once		
3.	Noise related	Noise and vibrations	Construction techniques and machinery selection seeking to minimize ground disturbance.	Construction techniques and use machinery	Construction techniques and machinery creating minimal ground disturbance- once at the start of work	IA (Contractor through contract provisions)	Construction period
			Construction activities only undertaken during the lean traffic period/night time to comply national noise standards	Timing of construction [noise level, dB(A)]	Construction schedule – every 2 weeks		
			Construction equipment to be well maintained.	Construction equipment – estimated noise emissions	Complaints received by local authorities – every 2 weeks		
4.	Escape of polluting materials	Environmental pollution	Proper disposal of slurry generated during drilling process to avoid water pollution.	Amount of slurry (m3) generated and disposal at designated place	Absence of fill in sensitive drainage areas – every ` weeks	IA (Contractor through contract provisions)	Construction period
			Proper segregation and safe disposal of construction solid waste	Amount generated/ disposed	Complaints received by local authorities – every week		

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
		Temporary blockage of utilities	Measure in place to avoid dumping of fill materials in sensitive drainage area.	Temporary fill placement (m^3)	Absence of fill in sensitive drainage areas – every 4 weeks	IA (Contractor through contract provisions)	Construction period
6.	Construction activities	Safety of local community	Ensure Site Specific Traffic Management Plan in place	Periodic and regular reporting /supervision of implementation of Traffic Management Plan and other safety arrangement	No. of incidents- once every week	IA (Contractor through contract provisions)	Construction period
			Coordination with local communities for construction schedules, Barricading the construction area and spreading awareness among locals				
		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)	
7.	Trimming /cutting of trees within RoW	Loss of vegetation and deforestation	Trees that will hinder construction activity should only be felled	Species-specific tree retention as approved by statutory authorities	Presence of target species in RoW following vegetation clearance - once	IA (Contractor through contract provisions)	Construction period
				Statutory approvals	Statutory approvals for tree clearances – once for each site	IA	
			Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.	Disposal of cleared vegetation as approved by the statutory authorities (area cleared in m^2)	Use or intended use of vegetation as approved by the statutory authorities – once per site	IA (Contractor through contract provisions)	

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Construction workers prohibited from harvesting wood in the project area during their employment, (apart from locally employed staff continuing current legal activities)	Illegal wood /vegetation harvesting (area in m^2, number of incidents reported)	Complaints by local people or other evidence of illegal harvesting – every 2 weeks	IA (Contractor through contract provisions)	Construction period
8	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
9	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
10	Influx of migratory workers	Conflict with local population to share local resources	Using local workers for appropriate tasks	Avoidance/reduction of conflict through enhancement/ augmentation of resource requirements	Observation & supervision–on weekly basis	IA (Contractor through contract provisions)	Construction period
11	Nuisance to nearby properties	Losses to neighbouring land uses/ values	Contract clauses specifying careful construction practices.	Contract clauses	Incorporating good construction management practices – once for each site	IA (Contractor through contract provisions)	Construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			As much as possible existing access ways will be used	Design basis and layout	Incorporating good design engineering		
			Damage road/other utilities will be reinstated following completion of construction	Reinstatement of land status (area affected, m^2)	Consultation with PWD authorities/ local urban body – immediately after completion of construction		
12	Inadequate siting of borrow areas	Loss of land values	Existing borrow sites will be used to source aggregates and 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
13	Health and safety	Injury and sickness of workers and members of the public	Safety equipment's (PPEs) for construction workers	Contract clauses (number of incidents and total lost-work days caused by injuries and sickness)	Contract clauses compliance – once every quarter	IA (Contractor through contract provisions)	Construction period
			Contract provisions specifying minimum requirements for construction camps				
			Contractor to prepare and implement a health and safety plan.				
			Contractor to arrange for health and safety training sessions				
14	Inadequate construction stage monitoring	Likely to maximise damages	Training of environmental monitoring personnel	Training schedules	No. of programs attended by each person – once a year	IA	Routinely throughout construction period
			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		

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Appropriate contact clauses to ensure satisfactory implementation of contractual environmental mitigation measures.	Compliance report related to environmental aspects for the contract	Submission of duly completed compliance report for each contract – once		
15	Electric Shock Hazards	Injury/ mortality to staff and public	Careful design using appropriate technologies to minimise hazards	Usage of appropriate technologies (no. of injury incidents, lost work days)	Preparedness level for using these technology in crisis- once a month	AEGCL/ APDCL	Design and Operation
			Appropriate warning signs indicating hazards at work place	Maintenance of fences	Report on maintenance – every 2 weeks		
			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		
			Fire emergency action plan and training given to staff on implementing emergency action plan	Training/awareness programs and mock drills			
16	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	AEGCL/ APDCL	Operation
			Preparation and training in the use of O&M manuals and standard operating practices				
			Staff to receive training in environmental monitoring of project operations and maintenance activities.				

APPENDIX-1:

SITE-SPECIFIC TRAFFIC SAFETY PLAN ALONG WITH METHODOLOGY BEING IMPLETENTED FOR U/G CABLING WORK

Traffic Safety Guidelines/Precautions along with its Methodology of Work

Introduction:-

The Double Circuit 132 kV Extra High Voltage cable's is going to be laid underground from 132 kV Guwahati Medical College GIS SS to 132 kV Assam Electricity Grid Substation ,Kahilipara via the GMC-Kahilipara hill side road along with maintaining proper and adequate safety measures at the time of excavation of works.

[A] Guidelines on safety in Road construction zones". With the following specifications.

1) Signage of retro-reflective sheet of high intensity grade.

2) Delineators in the form of cone/drums(300 to 500 dia and 1000mm high) made of plastic/rubber having retro-reflective red and white band , at a spacing of 5m along with a reflective tape to be tied in between the gaps of cones/drum for delineation dark hours and night.

3) Portable barricades using iron sheet with adequate iron railing painted with retro-reflective Paint.

4) Pavement marking.

5) Temporary fence/guard rail

6) Temporary concrete barriers including special pedestrian barriers

7) Other regulatory, warning and information signs

8) Red lantern or warning lights

9) Provision of flagmen.

10) Safety measures for workers engaged including PPE

11) First Aid and emergency response arrangements.

[B] The Traffic arrangement during construction shall be so as to ensure that.

1) Road users are accommodated through and around the construction zones safely with minimum of delays.

2) Traffic control and the construction activities are co-ordinate to provide for safe and efficient flow of traffic together with efficient, safe and rapid progress of the construction activity.

3) Where construction activities are taking place at multiple sites along the same or on parallel routes, construction activity and the movement of road users is co-ordinate to ensure that the total delay along the route or on signed alternative routes is within acceptable limits.

19/12/2024

river behavior is effectively influenced so that the speeds are reduced to the desired levels on the approaches to and within the construction zones

[C] Traffic safety and control

1) We shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic approaching or passing through the section of the Roadway under improvement.

2) The barricades erected on either side of the carriageway / portion of the carriageway closed to traffic, shall be of strong design to resist violation, and painted with alternate black and white stripes. Red lanterns of warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise.

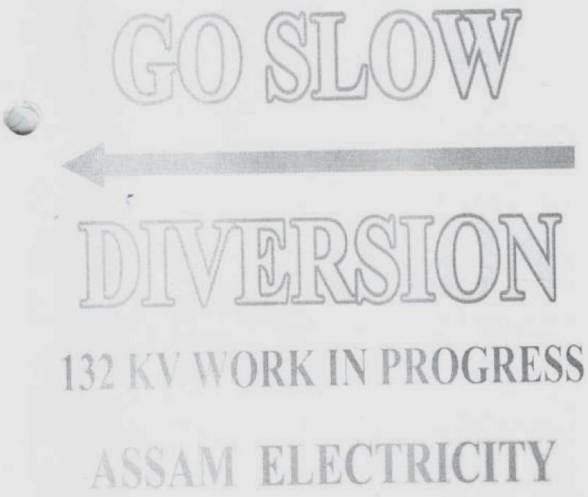
3) At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the Carriageway) the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums or Similar devices as per the directions of the Engineer. At night, the passage shall be delineated with lanterns or other Suitable light source.

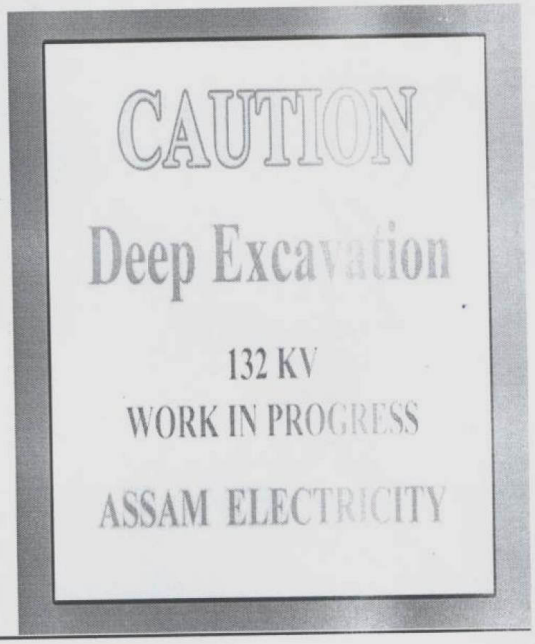
[D] Maintenance of Diversions and Traffic Control Devices

Signs, lights, barriers and other traffic control devices, as well as the riding surface of diversions shall be maintained in a satisfactory condition till such time they are required as directed by the Engineer. The temporary diversion road shall be kept free of dust, if necessary.

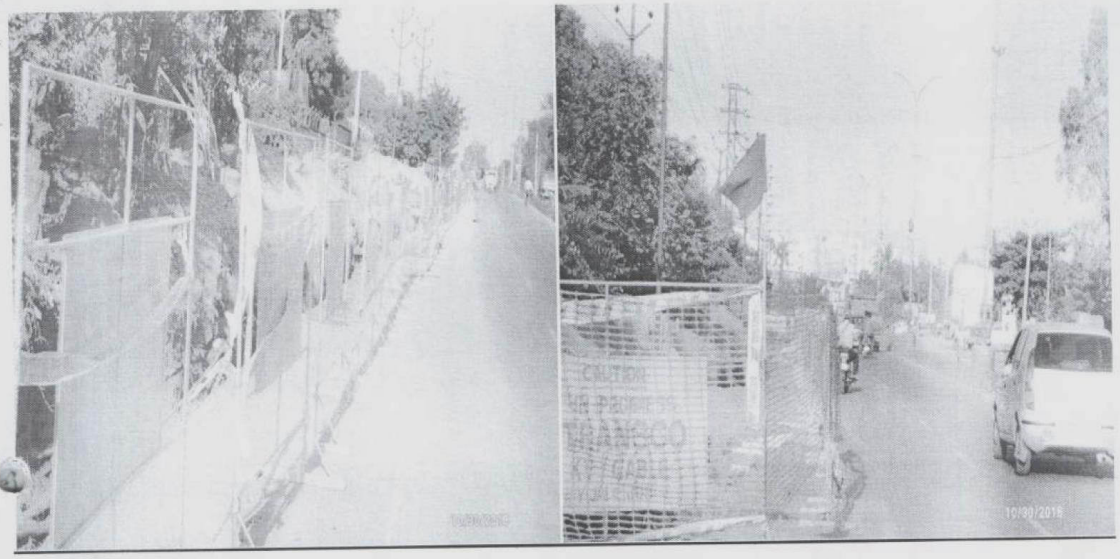
[E] Some Traffic Safety Symbols / Barricading will be used at site for our Excavation of 132 kV Cable Trench for Passing of Vehicles without any incontinence / hindrance.

1) EHV Cable Trench Diversion Symbols.





2) Barricading besides Cable Trench



3) Barricading at PIT EXCAVATION

Methodology of Work along with its Spacing Required for placing of Cable Drums at Critical Locations / Narrow road.

1) The Double Circuit 132 kV Extra High voltage cables will be laid in Tre foil formation by "Open Cut Buried Trench Method " under the **160 mm dia HDPE Pipes in the entire GMC-Kahilipara Hill Road.**

2) The depth and width of the **Open Cut Buried Trench will be 1075 Mtr X 1000 Mtr**.

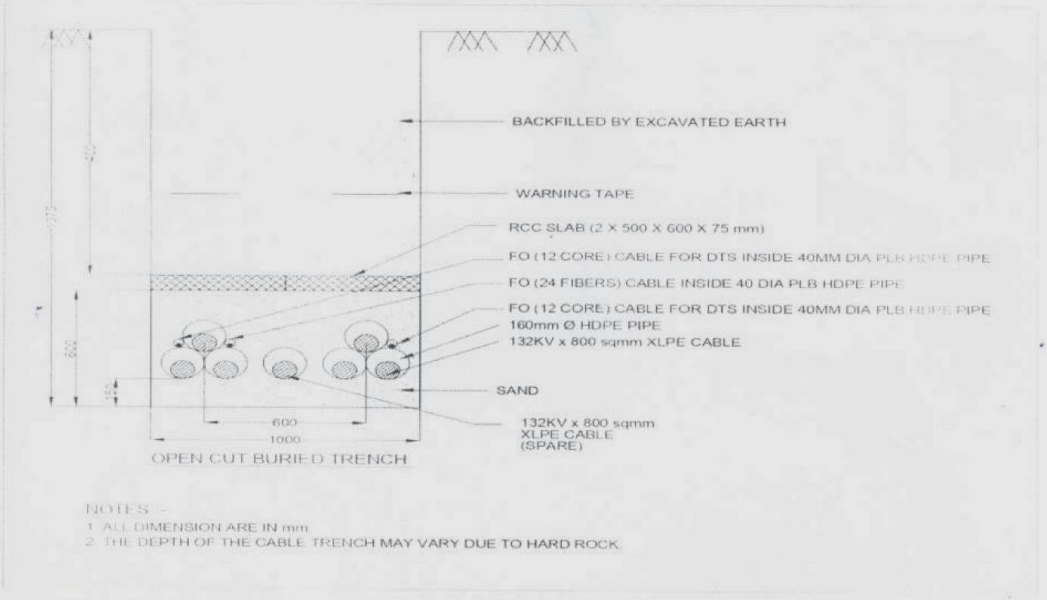
3) After the Excavation of the Desired Cable Trench, it will be filled with 150 mm Sand bed and after that 160 mm dia HDPE Pipes will be laid which will help the cables for getting damaged and once the HDPE Pipes are being placed inside the trench, the entire trench will be filled with filling sand and after that the trench will be covered by RCC Slab pertaining to the dimension 2 X 50 X 600 X 75 mm.

4) Once the RCC Slab are being placed the excavated trench will be provided by Warning tape for safety purpose and after that the entire trench will be backfilled by excavated earth.

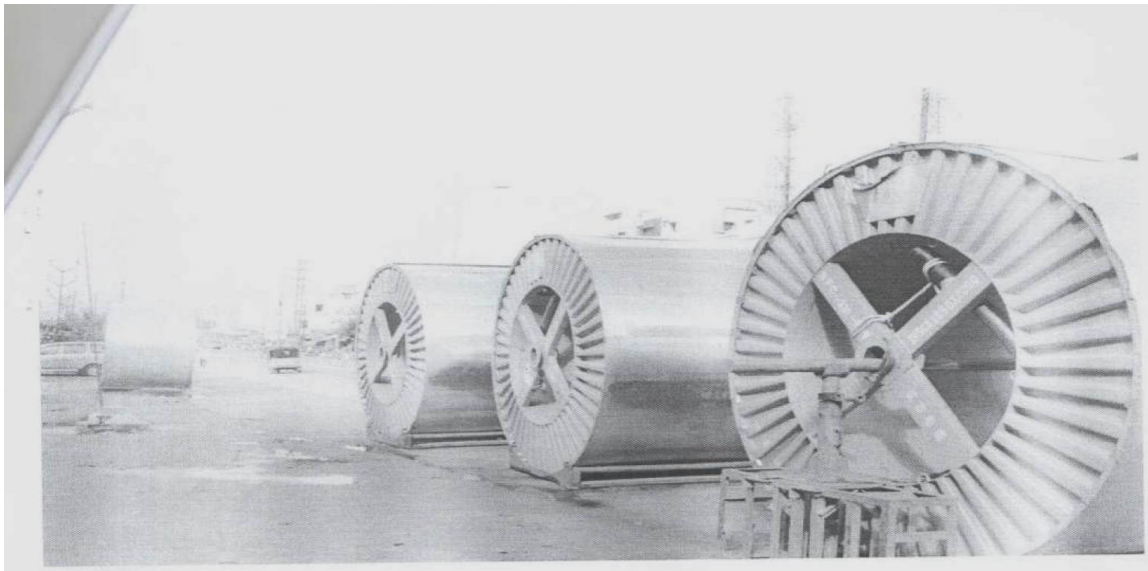
5) The scope of work covers detailed route survey , planning , design , Engineering , manufacturing , Supply , transportation , delivery at site , unloading , handling , laying , installation (including civil works) , jointing , termination , testing and commissioning.

6) On one day the cable trench will be excavated hardly around 100 Mtr looking into the site condition because the entire Hill road is covered with Hard rock and at a stretch i.e. from one Joint bay to another joint bay 500 Mtr excavation will be done for laying of the 7 Nos of EHV Cables.

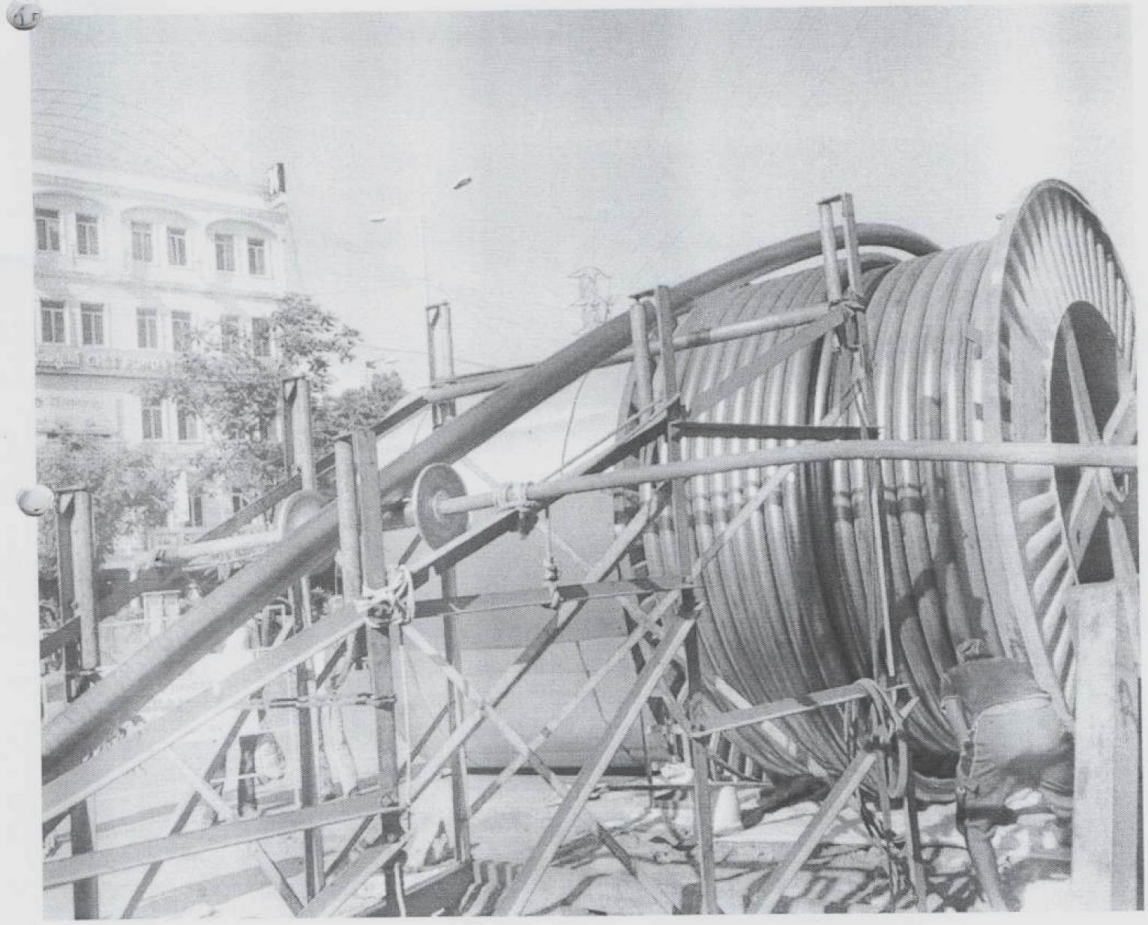
7) So, for completion of **500 Mtr of Open cut buried trench and laying of HDPE Pipes including backfilling will be taking around 25 Days.**



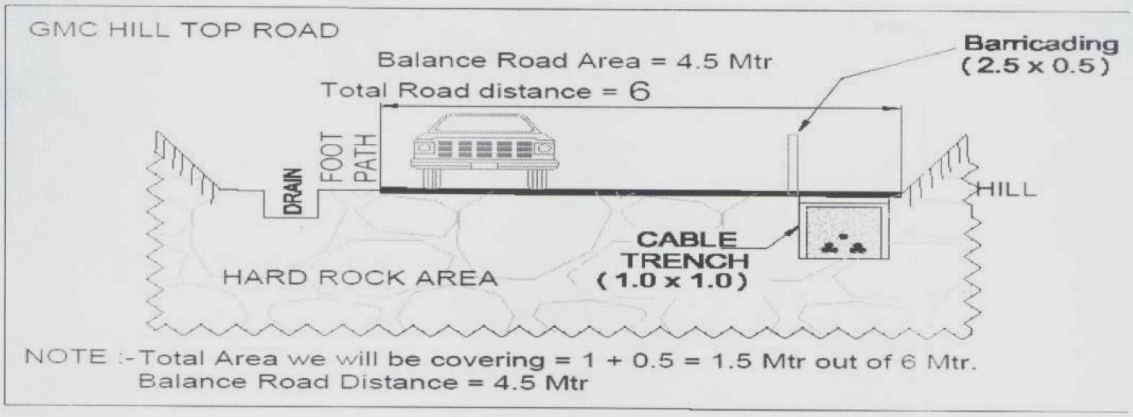
8) Placement of EHV Cable Drum along with Jack stand



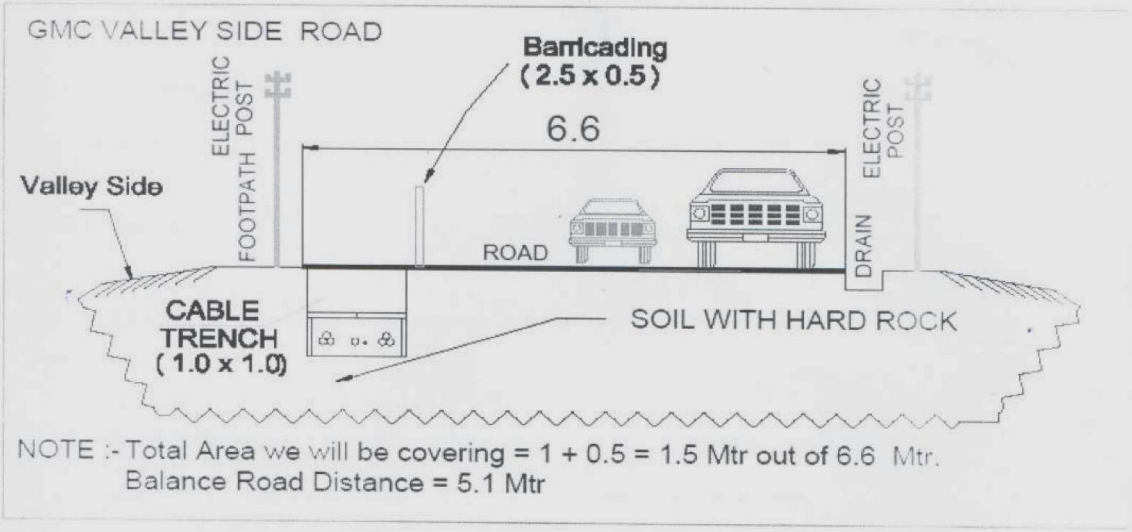
9) Cable Laying through Pay off deck



Locations showing Excavation of Buried Trench including placing of Barricading at Hill Top Road of width 6 Mtr



15) Locations showing Excavation of Buried Trench including placing of Barricading at Valley side Road of width 6.6 Mtr



18/12/2022

APPENDIX-2:
SAFEGUARD MANAGEMENT SPECIFIC TO U/G CABLE PROJECT INCLUDING DETAILS OF WASTE MANAGEMENT DURING EXECUTION

Method of U/G cable laying

Trenchless Method with Horizontal Directional Drilling (HDD) will be applied for laying of UG cable in instant project. This method is selected based on the recommendation of PWD and considering the following benefits:

- Very less earth cutting/digging involved.
- Inconvenience to public is very less.
- Obstruction to traffic & road side structures/shops is least.
- Damage to Roads and existing utilities is least.
- Minimum environmental & social Impacts

Initial work plan and statutory clearances

An initial work plan/sequence is prepared for the intended route where U/G cabling is planned. The route is divided preferably in 100 mtr sections and work plan for each 100 mtr section is finalized. Since, under the present scope, all the 5 nos. of U/G cabling are to be routed through the major roads of Guwahati area, therefore, work plan for night time with low traffic is envisaged. The plan for the whole route is submitted /intimated to the concerned utilities like PWD, PHE, Traffic, GMCH, BSNL & other Telecom Authorities. Joint inspection of route is done with existing utility representatives to ascertain the depth and location of other structures like underground pipes/cables etc. Meanwhile, all the statutory permissions required for UG cabling is obtained prior to execution of work (Copy of sample permission letters enclosed as **"A"**). The work plan intimation is also given to the shop owners, street vendors house owners etc. adjacent to the route along with the duration of work and the probability of temporary inconvenience caused to them.

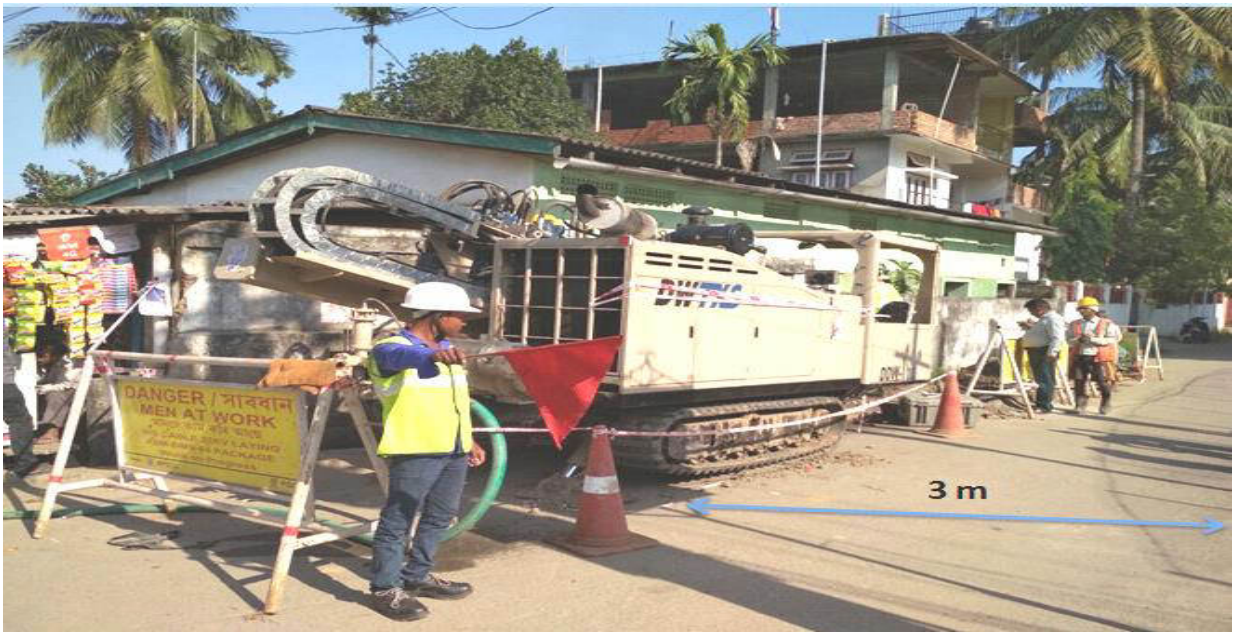
INFORMATION DISSEMINATION TO STREET VENDOR/PUBLIC ALONG THE U/G CABLE ROUTE

Sequence of UG Cabling activities & Safeguard Management Measures

The sequence of activities involved in 33kV underground cable laying along with related safeguard management measures are described below;

- **Excavation of entry (launch) pit and exit (reception) pit.** Pit of dimension (2 x 2 x 3) m^3 will be dug along the proposed route at an average distance of 100 meter. It serves as an inspection pit also as existing utilities and their depth can be determined from this. The excavated earth is kept beside the pit maintaining a safe distance and the area is properly barricaded. The pit is backfilled with the same soil after completion of work.

- **HDD machine placement: Horizontal Deviation Drilling (HDD) Machine is placed near the entry pit with proper barricading.**



- **Drilling/Reaming: Drilling** process start with piloting so as to trace the route. Bore holes are made with reamer of different diameter.

- **HDPE Pipe Jointing**: HDPE pipe are joined for 100 mt section by jointing kit and pipe are aligned properly.

- **HDPE Pipe Pulling**: The pipes are pulled for 100 m.

Backfilling of Pit and Shifting of Machine: The returning drilling fluids along with the slurry are collected in the entry (launch) pit. This slurry /mud is then disposed of at identified low lying areas with due consent from the owner. After pipes are pulled, pits are backfilled and levelled properly and thereby machine is shifted to a new place.




- **Construction of Joint Box**: Joint Box are placed at the proper jointing pit.
- **Cable Jointing**: Jointing of the cable is done inside the jointing box.
- **Backfilling and covering of Joint box**: After backfilling, Joint Box are covered with slab for safety.
- **Restoration of the road after construction:** After completion of construction work restoration of road particularly excavated pits area is done by the PWD as per their technical specification for which the required restoration fees was deposited by POWERGRID. Sample photos of Site restoration by PWD of earlier implemented project under NERPSIP IN Guwahati City

WASTE MANAGEMENT PLAN:

(i) Estimation of quantity of slurry generation:

The volume of slurry generated during drilling period is approximately **1616 m3.**

Diameter of drilling hole = 0.300 Meter
Total length of the drilling = 22873 Meter

Volume = $\pi r^2 h$

= (3.14 X .0225 X 22873)

= **1616 m3**

(ii) Disposal Mechanism:

The returning drilling fluids along with the slurry are collected in the entry (launch) pit. The slurry is then collected & transported by Contractor in sealed trolley to the designated disposal sites. Also, slurry/mud is disposed to nearby low-lying areas with due consent from the owner. A sample consent letter obtained in earlier UG project in Guwahati is enclosed as "**B"**. In case of the instant UG cabling, adequate nos. of disposal sites will be identified by Contractor and POWERGRID for disposal of drilling mud/slurry in such a way that land development can be achieved with due consent of owner. As per previous experience, it is also seen that some residents voluntarily request for disposal of the mud to their backyard or low-lying areas their premises. The same has been done after getting written consent from them

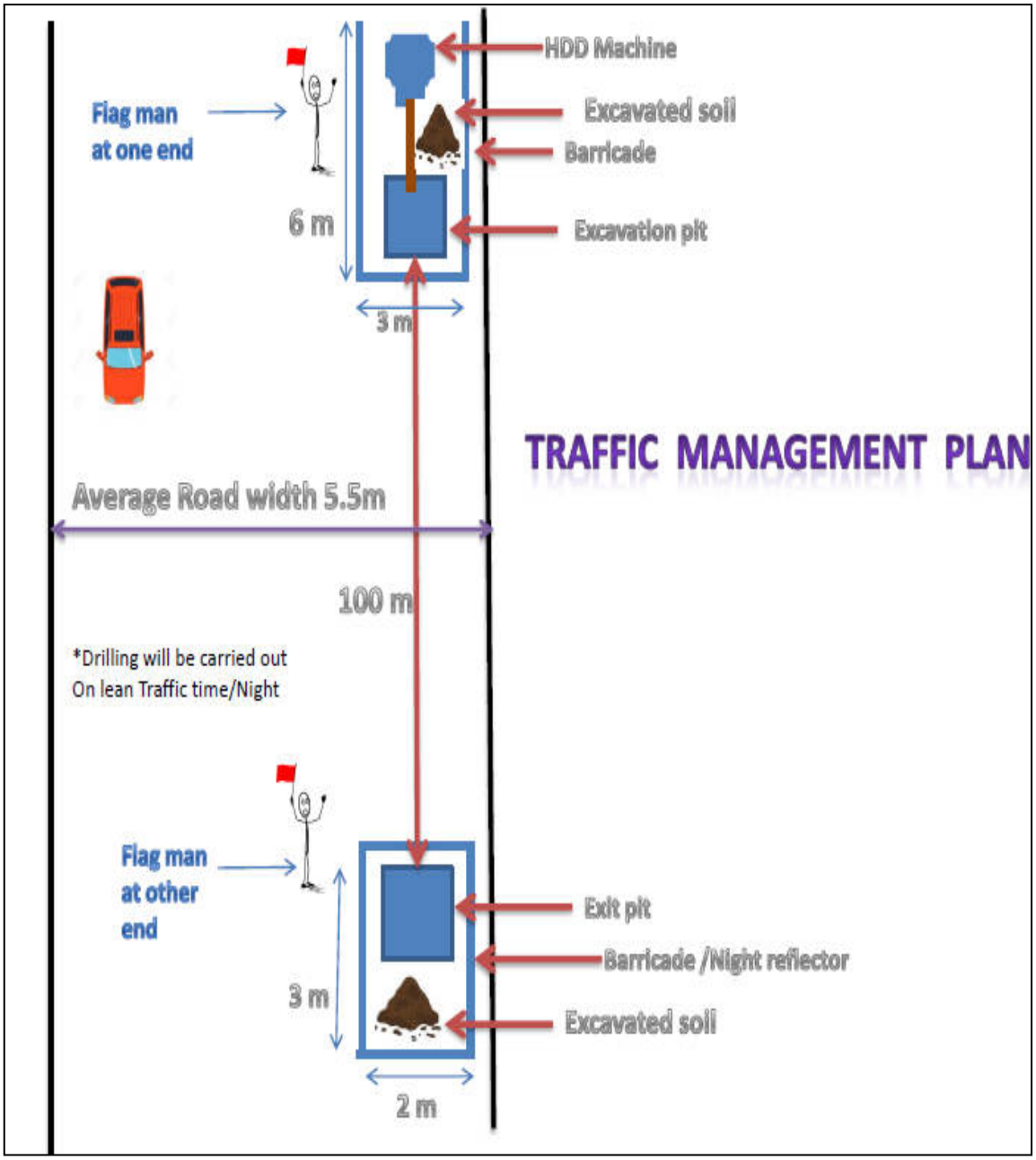
iii) Disposal of Excavated Earth:

Excavated earth is backfilled in the pit, low lying areas and duly compacted to the satisfaction of the PWD authority after completion of work.

TRAFFIC MANAGEMENT PLAN:

Since laying of UG cable is proposed along the existing PWD roads in Guwahati city area there will be temporary restriction to traffic flow during construction/drilling activity. Site specific traffic management measures such as proper barricading around the pit, flag man to be placed at both ends and HDD machine, traffic diversion sign boards, night reflector to be placed during night time etc. shall be undertaken to avoid any unforeseen incident/hindrance to the movement of traffic. Besides, approval and permission from the Guwahati Traffic Department based on site specific traffic management plan will be mandatorily obtained prior to execution of work. Also help of local regulatory authority like nearby police station/traffic department during such activity. A schematic of traffic management plan for is below;

.



"A"

SAMPLE TRAFFIC PERMISSION IN 33 KV U/G CABLE WORK

OFFICE OF THE DEPUTY COMMISSIONER OF POLICE, TRAFFIC GUWAHATI, ASSAM

Memo No.: - GTP / DCP, Traffic / 2020 / 10 / 767 , Dated: 01.12.2020

To

Shri M.K. Datta,
Chief Manager,
Power Grid Corporation of India Limited,
Monal Tower, 6th Floor,
G.S. Road, Dispur, Guwahati-6.

Sub:- Traffic permission for execution of 33 KV underground cable laying works from 132 KV GMCH substation(Bhangagarh) to Ganeshguri Fly Over under North Eastern Region Power System Improvement Project(NERPSIP).

Ref.:- NERPSIP/GHY/UG cables/Traffic/2020/ dated 19.11.2020.

Sir,

In inviting a reference to the subject cited above, I would like to state that clearance is given from this end, from traffic point of view, for execution of the above-mentioned works subject to the following conditions: -

1) The total distance to be covered for laying of 33 KV underground cable is approximately 5 kms; from 33/11 KV Chabipool substation, Hengrabari to 132 KV GMCH substation, Bhangagarh. Hence cable laying should be done by HDD Method, as far as possible, so as to maintain the smooth flow of traffic.
2) It should be ensured that the vehicular movement is not affected and hence the barricades for the said purpose should be restricted to the white-lines on the road-side. Under no circumstances they should encroach the motorable road.
3) The execution of the work should be preferably during the night hours and should be undertaken with the consent of the undersigned and the concerned In-Charge Traffic.
4) The work should be completed as fast as possible and there should not be any delay after starting.
5) The clearance is subject to being withdrawn at any time in case of deviation from the above conditions or in case of any exigency.

Yours faithfully

Deputy Commissioner of Police, Traffic,
Guwahati, Assam

2021/6/24 12:15

RESTORATION OF DAMAGES ROADS BY POWERGRID IN EXISTING CABLE

GOVT. OF ASSAM
OFFICE OF THE EXECUTIVE ENGINEER, P.W.D WEST GUWAHATI TERRITORIAL ROAD DIVISION
FANCY BAZAR, GUWAHATI – 1

No.:- WGTRD/ BR -2/ 2801 Date: - 24/12/2020

To,

The Chief Manager,
Power Grid Corporation of India Limited
Guwahati

Sub:- Permission for Restoration of Damaged Road Surface caused by Laying of underground 33 KV U/G Cable by POWERGRID CORPORATION of India LTD at AEC Approach Road at Power House Point to Towards Assam Technical University at Alternative Approach Road to AEC road, with Provision of Earth work in excavation, providing inverted choke, GSB, WBM, SDBC etc. (At Open Trench & OFC Jointing Box).

Ref:- Your No. NERPSIP/Ghy/UG Cables/PWD/2020/ Dt. 05/12/2020

Sir,

With reference to the subject cited above, permission is granted for Restoration of Damaged Road Surface caused by Laying of underground 33 KV U/G Cable by POWERGRID CORPORATION of India LTD at AEC Approach Road at Power House Point to Towards Assam Technical University at Alternative Approach Road to AEC road, with Provision of Earth work in excavation, providing inverted choke, GSB, WBM, SDBC etc. (At Open Trench & OFC Jointing Box) as per the following terms and condition.

Terms and conditions:

1. The work will have carried out in consultation with the AEE PWD West Guwahati Territorial Road Sub Division III, Guwahati – 1.
2. Local Police station has to be informed before starting the work.
3. All precautionary measure i.e, barricade, sign board and caution board will have to be provided by your department.
4. Caution must be taken to cause least possible damage to the road while executing OFC work. Also it may be taken care to cause least possible disturbance to the vehicular and pedestrian.
5. While executing your work, if any underground cable or pipeline of other department is damaged by you the responsibility will be rest solely upon you.
6. The materials required for preliminary restoration work i.e, coarse sand/ sand gravel/ stone crusher dust etc will have to be collected at site prior to starting the work and excavated pit/ pits will have to be filled up properly just after completion of the OFC work.
7. The work must be completed within 30 days from the date of issue of this letter.

Yours Faithfully

23/12/2020

(Er. P.C Kakati)
Executive Engineer, PWD
West Guwahati Territorial Road Division
Fancy Bazar, Guwahati - 1

23/12/2020

Memo No. WGTRD/BR -2/ Date:-

Copy to:

1. The Superintending Engineer, PWD Guwahati ARIASP Circle, Guwhati – 21 for favour of kind information.
2. The Assistant Executive Engineer, PWD West Guwahati Territorial Road Sub Division for information.

(Er. P.C Kakati)
Executive Engineer,PWD
West Guwahati Territorial Road Division
Fancy bazar, Guwahati - 1

2021/6/24 12:14

SAMPLE DAMAND LETTER FOR RESTORATION OF DAMAGED ROAD DURING U/G CABLE WORK

GOVERNMENT OF ASSAM
OFFICE OF THE EXECUTIVE ENGINEER, P.W.D. (ROADS),
DISPUR TERRITORIAL ROAD DIVISION, BAMUNIMAIDAM, GUWAHATI-21

No DTRD/1656 Date 12/04/2021

To

The Chief Manager
Power Grid Corporation of India Ltd
Monal Tower, 6th Floor, G S Road
Dispur Post
Guwahati-06

Sub :- Submission of Estimate for the work " Restoration of damaged road surface caused by the laying of underground 33KV cable of POWERGRID Corporation of India Ltd from Narengi Substation to 33 KV Bamunimaidam Substation, under PWD Guwahati City Division II.
Length Appx length 2.20 km.
Estimated Amount: - Rs. 80.86 L

Sir,

With reference to the above, I have the honour to submit herewith the above mentioned estimate for favour of your kind disposal.

Enclo :- 1 (One) No estimate in triplicate

Yours faithfully

23.4.21

Executive Engineer, PWRD
Dispur Territorial Road Division
Guwahati-21

Memo No :-
Date :-

Copy to :-

1. The Superintending Engineer, PWD, ARIASP Circle, Bamunimaidan, Guwahati-21 for favour of kind information.

Executive Engineer, PWRD
Dispur Territorial Road Division
Guwahati-21

"B"

SAMPLE CONSENT LETTER FROM OWNER FOR DISPOSAL OF MUD FOR LAND DEVELOPMENT

Consent Letter

The undersigned hereby give my consent for disposal of mud in the designated area(...10.1.25 bi) within my boundary premises situated at House No..6.....
....Rupnagar...Gau-32

The disposal of the mud is required for the purpose of land development in that area as per my own requirement.

M. No 9854970707
Signature of owner

Witness:
1.
2. Powergrid

opposit Power Grid
Sub-Station, NRC