

Semi-annual Environmental Monitoring Report

Project Number: 42378-017
December 2019

**Power System Expansion and Efficiency
Improvement Investment Program -
Tranche 3
Output-2: Transmission System expanded and
upgraded**

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Semi-annual Environmental Monitoring Report

Loan No : 3350-BAN

Semi-annual Report

Reporting Period : July, 2019 to December, 2019

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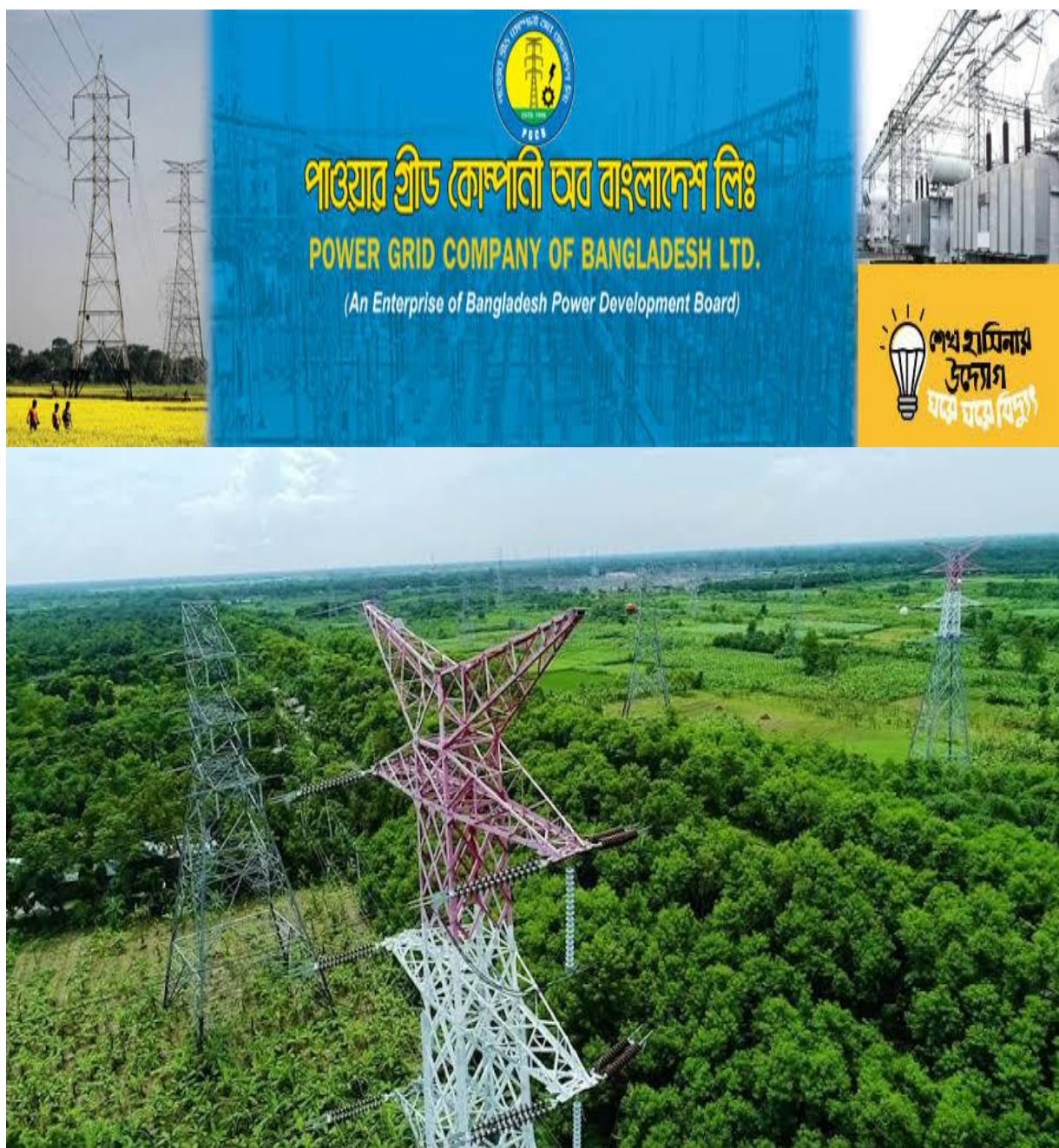
Loan No 3350-BAN: Power System Expansion and Efficiency Improvement Investment Program-Tranche 3 (400/230/132 kV Grid Network Development Project)

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POWER GRID COMPANY of BANGLADESH (PGCB) LIMITED
MINISTRY OF POWER, ENERGY & MINERAL RESOURCES
GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH



5th Environmental Monitoring Report

December, 2019

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Abbreviations and Acronyms

ADB Asian Development Bank

GoB Government of Bangladesh

DoE Department of Environment

CEGIS Center for Environmental and Geographic Information Services

PGCB Power Grid Company of Bangladesh Ltd

GNDP Grid Network Development Project

BECA Bangladesh Environment Conservation Act

BECR Bangladesh Environmental Conservation Rule

HSCL Health & Safety Hazard Check List

ECR Environmental Conservation Rule

PAP Project Affected Persons

EOHS Environmental and Occupational Health & Safety

IEE Initial Environment Examination

EIA Environmental Impact Assessment

ECA Environment Conservation Act

EMP Environmental Management Plan

EPC Engineering, Procurement and Construction

TL Transmission Line

Executive Summary

This Environmental Monitoring is conducted based on ADB safeguard's policy, the laws and policies of Bangladesh Govt. and Loan covenants between ADB and GoB.

At this stage, 5th monitoring has been completed on Four locations (Kachua, Kalurghat, Madunaghat and Comilla South) where sub stations are being started for rehabilitation and augmentation. The project includes construction of 4 nos. (new 2 nos. and up gradation 2 nos.) Grid substations and construction of approximately 72 km Transmission lines to improve transmission network of Dhaka & Chittagong and improve the power supply reliability.

Based on the prepared checklist and policy standard of ADB, Bangladesh Govt. and loan covenant between ADB and Bangladesh Govt. , the monitoring team observed the physical (Air quality, waste management, Noise and soil quality), Ecosystem and Biodiversity and social environmental status of the construction site qualitative and quantitative approaches.

The labors, site manager, Health and safety manager, and relevant stakeholders were consulted and different environmental and social issues like occupational health and safety and working condition status (i.e. labor shed, toilet facilities, source of drinking water, wash room, kitchen etc) and gender status, and equal opportunity for those labors were explored during this stage of the environmental monitoring.

Based on the selected parameters of air quality, the results of the air quality were checked to be satisfactory at the project site, whereas no external source of air pollution was observed that can deteriorate air quality in the project areas. During field visit, it was found that water is being sprayed every day to control fugitive dusts and other particles when earth materials become suspended.

The noise levels were measured during morning at the Kachua, Kalurghat, Madunaghat and Comilla South sites and the average noise levels were found to be 60 dB, 68 dB, 72 dB and 75 dB respectively. Waste management system at Kachua, Kalurghat, Madunaghat and Comilla (South) was relatively good. All the sites were neat and clean in terms of prevalent solid wastes. Besides, considering the overall situation been observed, there were no significant impacts on the existing vegetation and wildlife.

The working environment is good inside the sub-station; all labors use safety equipments provided by the EPC (Engineering, Procurement, and Construction) contractor. The monitoring team suggested for complying all things using safety equipment for avoiding any accidental cases during the construction activities.

1. Introduction

1.1 Background.

1.1.1 The People's Republic of Bangladesh has scaled up its priority to strengthen the electricity production, transmission, and distribution for overall growth and development of the country. In this respect, Bangladesh Govt. has set their goal in providing access to affordable and reliable electricity for all by 2021.

1.1.2 To meet up this increasing demand, Power Grid Company of Bangladesh Ltd (PGCB) has taken initiatives to expand its infrastructure in the transmission system with the construction of the new line, substations, and renovation of existing substations. This project has already obtained the site and environmental clearance certificate from DoE and started the construction works.

1.1.3 The project should be implemented in compliance with all the applicable Environmental and Social Rules and Regulations under the Environmental conservation Rule (ECR) 1997 of Bangladesh, Environmental and Social Management Plan and Monitoring plan described in the EIA report as well as the requirement of Project financier-Asian Development Bank (ADB).

1.1.4 A checklist has been prepared to monitor all indicators regarding national laws and policies as well as the ADB loan covenants. The EPC Contractor started construction for substations & Transmission Line locations and monitoring result identified through monthly field visit regarding the indicators fixed in the checklist.

1.1.5 Under Power System Expansion and Efficiency Improvement Investment Program - Tranche 3 of ADB, 400/230/132 kV GND Project of Power Grid Company of Bangladesh (PGCB) is executing this project. A loan agreement was signed between ADB and GoB in this regard on December 22, 2015.

1.1.6 A loan agreement was signed between ADB and GoB in this regard on December 22, 2015. The project includes construction of 4 nos. (New 2 nos. and up gradation 2 nos.) Grid substations and construction of approximately 72 km Transmission lines to improve transmission network of Dhaka & Chittagong and improve the power supply reliability.

1.2 Objectives:

1.2.1 Main Objective

The main objective of the environmental monitoring is to observe how EMP is compiled in relation with national and international standard in pre-construction, construction and operation phase of the project.

1.2.2 Specific Objectives

The specific objectives of the environmental monitoring are to:

- i. Analyze the water and air quality in pre and construction phase of the project
- ii. Analyze noise in three stages of the project
- iii. Explore land characteristics in the project sites
- iv. Analyze the waste management system of concerned authority or EPC Contractor
- v. Monitor working condition and occupational health safety during project lifetime
- vi. The environmental compliance monitoring would include: Analysis of Environmental and Social Safeguarding Laws and Policies of Bangladesh.

Description of Environmental and Social Management, and Monitoring Plan described in the EIA in line with ADB's requirements.

1.3 Project locations:

The final list of the proposed sub-stations area mentioned in the Table 1.1.

Table 1.3.1: Proposed Substations/ Transmission Lines

Sl. No.	Name of the substations/ Transmission Lines	Address	Remarks
01	Kachua 132/33 kV, 2x50/75 MVA AIS Grid Sub-station.	Kachua, Chandpur.	
02	Kalurghat 132/33 kV, 2x50/75 MVA GIS Grid Sub-station.	Kalurghat, Chittagong.	
03	Up gradation of Madunaghat 132/33 kV AIS substation to GIS substation at.	Madunaghat, Chittagong.	
04	Up gradation of 132/33 kV AIS substation to GIS substation at Comilla(S).	Comilla South	
05	Madunaghat-Kalurghat 132 kV Double Circuit Underground Transmission Line	Madunaghat-Kalurghat	7 km
06	Re-conductoring of Existing Comilla(South)-Chandpur 132 kV Double Circuit Overhead Transmission Line	Comilla(South)-Chandpur	65 km

SITE LOCATION OF THE PROJECT:

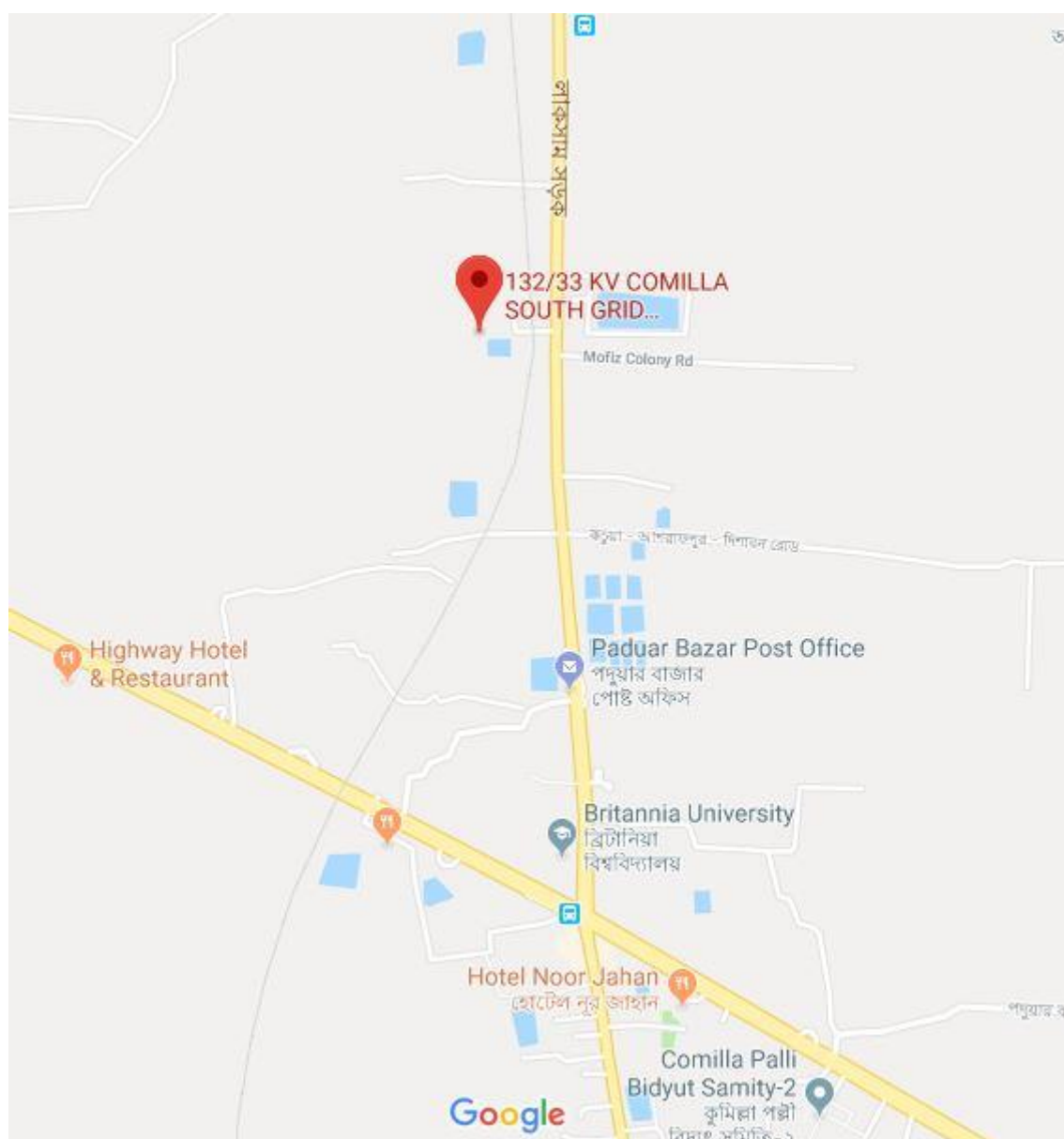


Fig-1: Site Location of 132/33 kV GIS Grid Substation at Comilla (South).

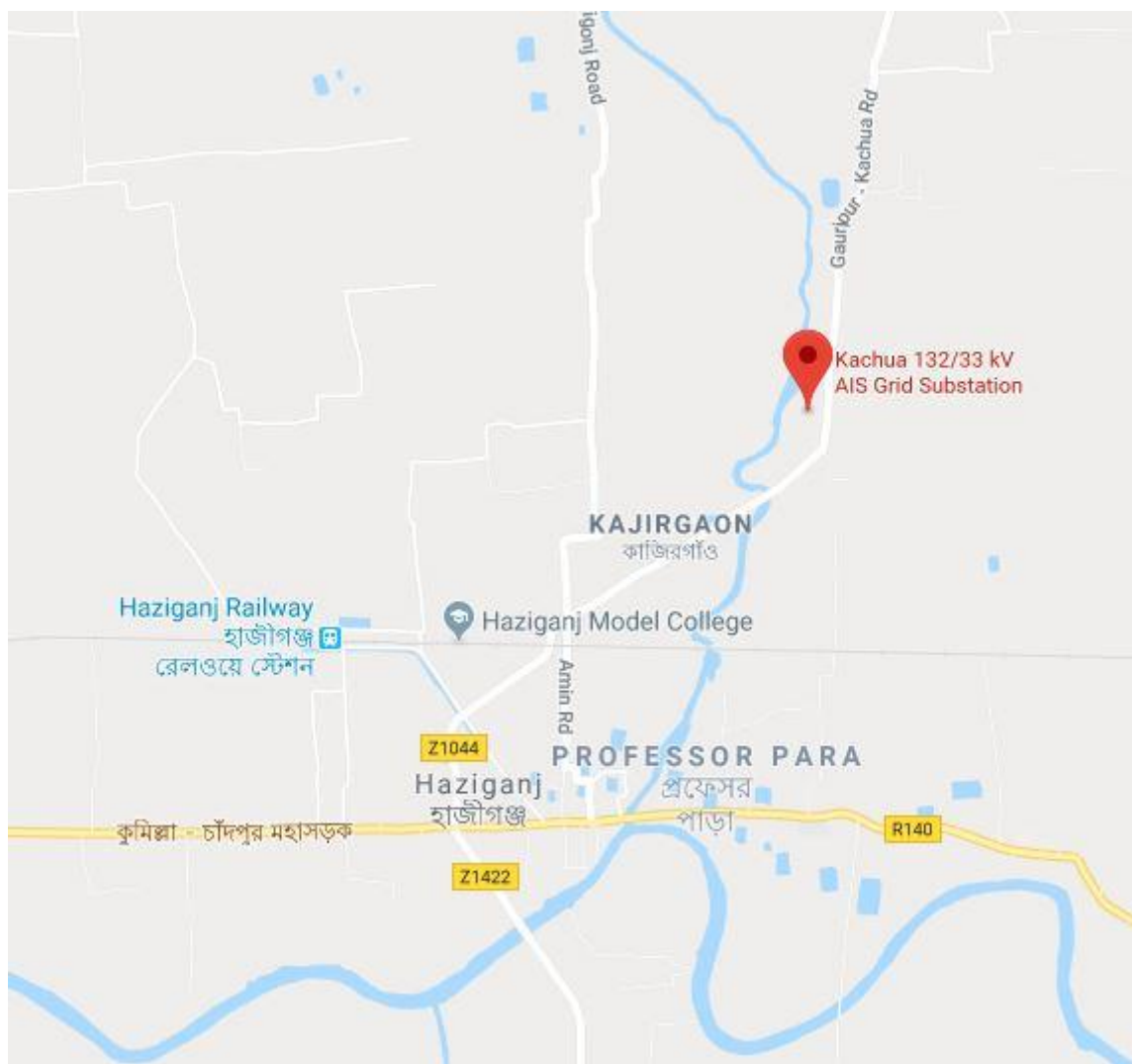


Fig-1: Site Location of 132/33 kV AIS Grid Substation at Kachua, Chandpur.



Fig-1: Site Location of 132/33 kV GIS Grid Substation at Kalurghat, Chittagong.

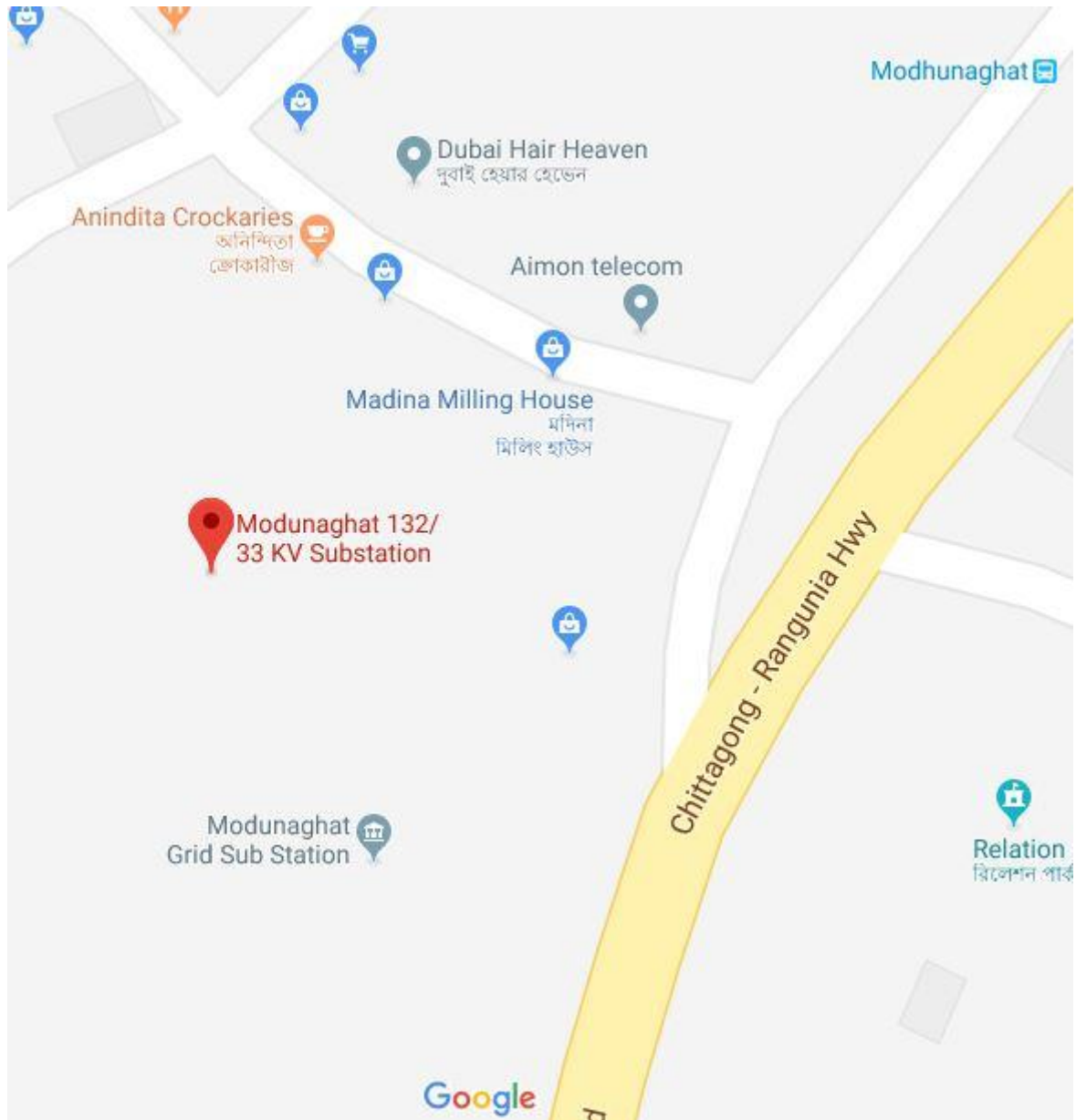


Fig-1: Site Location of 132/33 kV GIS Grid Substation at Madunaghat, Chittagong.

2.0 Project Description

PGCB is the implementing agency of 400/230/132 kV Grid Network Development Project under the Ministry of Power, Energy and Mineral Resources.

2.1 Objectives of the Project

- ✚ To increase the power supply reliability of Cumilla, Chandpur (Kachua) and Chittagong (Kalurghat & Madunaghat) area.
- ✚ To meet the growing demand of Cumilla, Chandpur (Kachua) and Chittagong (Kalurghat & Madunaghat) area.
- ✚ To strengthen the power evacuation arrangement & increase power supply stability, reliability &
- ✚ Transmission capability in Cumilla, Chandpur (Kachua) and Chittagong (Kalurghat & Madunaghat) area.

2.2 Scope of Work of the Project:

✚ Lot-1 (Sub-station):

- a) New 132/33 kV, 2x50/75 MVA AIS Grid Sub-station at Kachua.
- b) New 132/33 kV, 2x50/75 MVA GIS Grid Sub-station at Kalurghat.
- c) Up gradation of 132/33 kV AIS substation to GIS substation at Madunaghat.
- d) Up gradation of 132/33 kV AIS substation to GIS substation at Comilla(S).

✚ Lot-2 (Transmission Lines):

- a) Madunaghat-Kalurghat 132 kV Double Circuit Underground Transmission Line: 7 km
- b) Re-conductoring of Existing Comilla(South)-Chandpur 132 kV Double Circuit Overhead Transmission Line: 65 km

The details of the said project are given in Table-2.1.

Table-2.1: Project at a Glance

Project Title	:	400/230/132 kV Grid Network Development Project (Power System Expansion and Efficiency Improvement Investment Program- Tranche 3, Loan No: 3350-BAN)
Ministry/Division	:	Ministry of Power, Energy and Mineral Resources/Power
Executing Agency	:	Power Grid Company of Bangladesh Limited (PGCB)
Location of the Project	:	District: Cumilla, Chandpur & Chittagong. Upazilla: Cumilla Sadar, Hajiganj, Hathajari, Chandgaon.

- **Lot-1 (Sub-station):**

Construction and Completion of 132/33 kV AIS Substation at Kachua, 132/33 kV GIS Substation at Kalurghat and Upgradation of Existing 132/33 kV Madunaghat and Comilla (S) AIS Substation to GIS Substation on Turnkey Basis (Contract No. PSEEIP (TRANCH-3)/ADB/PGCB/P03/SS) has been signed between PGCB and M/s. ABB India Ltd., India.

- **Lot-2 (Transmission Lines):**

Design, Supply, Erection, Testing & Commissioning of Madunaghat-Kalurghat 132 kV Double Circuit Underground Transmission Line and Re-conductoring of Existing Comilla(S)-Chandpur 132 kV Double Circuit Overhead Transmission Line on Turnkey Basis. (Contract No. PSEEIP (TRANCH-3)/ADB/PGCB/P03/TL) has been signed between PGCB and M/s. CCCE-ETERN-HANBAEK Consortium.

2.3 Project Progress Status and Implementation Schedule:

General Information:

- **Lot-1 (Substation):**

Contract No: PSEEIP (TRANCH-3)/ADB/PGCB/P03/SS

Implementation Schedule:

The project completion date for Lot-1 (Substation) is August 06, 2020 (including Provisional time extension).

- **Lot-2 (Transmission Lines):**

Contract No: PSEEIP (TRANCH-3)/ADB/PGCB/P03/TL.

Implementation Schedule:

The project completion date for Lot-2 (Transmission Line) is March 31, 2020 (including Provisional time extension).

Present Status:

- **Physical Progress:**

Lot-1 (Substation):

1. Upgradation of 132/33 kV Comilla (South) AIS Substation to GIS Substation:

- i) Pilling, Pile cap casting, Ground floor, 1st floor & 2nd floor roof slab casting for GIS building has been completed.
- ii) Brick work (90%) & Plaster work (100%) for GIS building is completed and facing brick installation work is in progress.
- iii) Pile & Pile cap casting and roof slab casting for Ansar barrack has been completed.
- iv) Pilling & Pile cap casting for Gantry is completed and Column casting is in progress.

- v) Cable trench work is completed-25%
- vi) Major Equipment & Materials reached at site.

2. 132/33 kV AIS Substation at Kachua:

- (i) Pilling, Pile cap casting, Ground floor, 1st floor & 2nd floor roof slab casting for CRB has been completed.
- (ii) Brick & Plaster work for CRB is completed and Tiles & Facing brick installation work is in progress
- (iii) Pilling, pile cap casting, ground floor, 1st floor & 2nd floor roof slab casting for Dormitory Building has been complete.
- (iv) Brick work for Dormitory building is completed and Plaster work is in progress.
- (v) Transformer Civil foundation work and Transformer installation has been completed.
- (vi) Civil foundation & Erection for both 132kV & 33kV Gantry has been completed & stringing work is in progress.
- (vii) Internal road is completed-60% and Boundary wall is completed-20%.
- (viii) Major Equipment & Materials reached at site.

3. 132/33 kV GIS Substation at Kalurghat:

- (i) Pilling, Pile cap casting, Ground floor & 1st roof slab casting for GIS building has been completed & 2nd Floor Column casting is in progress.
- (ii) Brick work & Plaster work for Ground floor of GIS building is completed.
- (iii) Transformer Civil foundation work & Transformer installation has been completed and Erection work is in progress.
- (iv) Foundation work for 132kV Gantry has been completed.
- (v) Major Equipment & Materials reached at site.

4. Upgradation of 132/33 kV Madunaghat AIS Substation to GIS Substation:

- (i) Pilling, Pile cap casting, Ground floor slab casting for GIS building has been completed and 1st Floor Column & Tie beam casting is in progress
- (ii) Transformer Civil foundation work & Transformer installation has been completed.
- (iii) Civil foundation for 132 kV Gantry is completed-40%
- (iv) LA foundation is completed-50% and CSS foundation is completed-40%.
- (v) Major Equipment & Materials reached at site.

Lot-2 (Transmission Lines):

1. Madunaghat-Kalurghat 132kV Double Circuit Underground Transmission Line :

- (i) Cable laying work is completed-35% (City Corporation & Railway Crossing portion).
- ii) MOU Signed is in progress with Roads & Highway, Chittagong.
- iii) Required 132 kV XLPE Power Cable with necessary accessories has reached at site.

2. Re-conductoring of Existing Comilla(S)-Chandpur 132kV Double Circuit Overhead Transmission Line:

- (i) Re-conductoring work has been completed & LILO work is in progress.

3.0 Compliance to National Regulations

3.1 Brief summary of status of compliance with Environmental Conservation Rules 1997:

Bangladesh Environmental Protection Act 1995 and subsequent amendments and relevant Acts including Environmental Conservation Rules (ECR)1997 calls for environment-friendly execution of any Power Sector Development project in its all stages of Pre-Construction, Construction and Post Construction activities.

According to Environment Conservation Act 1995 and Environment Conservation Rules 1997, all projects have been classified into four categories (Green, Orange A, Orange B and Red). The power development projects are allocated to the red category, which triggers an automatic requirement for an Initial Environment Examination (IEE) followed by a full Environmental Impact Assessment (EIA) study. Subject to satisfactory review of the environmental assessment, the Department of Environment (DoE) issues an authorization for the project to proceed. The authorization consists of two parts: a “site clearance”, which gives approval to the site proposed for the project and an “environmental clearance”, which approves the content of the project.

A key requirement of the IEE/EIA for projects classified in the Red categories is an Environment Management Plan (EMP). The function of the EMP is to enable the project proponent PGCB to show the DoE how it will deliver the environmental performance assessed in the IEE/EIA (for which DoE approval is sought). The EMP must describe in detail organization and management responsibilities, give details of

how mitigation measures identified in the IEE/EIA will be implemented and explain how monitoring will be carried out.

The PGCB, as the executing agency, is responsible for carrying out IEE and EIA studies of the project. PGCB has already engaged Center for Environment and Geographic Information Services (CEGIS) for conducting IEE and EIA study by splitting the total project between two sections: Section A for TRANCH-2 & Section B for TRANCH-3. IEE and EIA study has been completed for all those sections and based on the assessment; environmental clearance from DoE has been received for all the sections.

EMP has been made by CEGIS as a prerequisite of submitted EIA and getting approval from DOE. The EA (PGCB) has made its contractors concerned about the EMP and site activities are monitored to check the compliance with EMP.

3.2 Compliance to Environmental Covenants from the ADB Loan Agreement:

Civil construction works at different sites are running under the project. DOE's regulations and ADB's Safeguard Policy Statement (2009) are in general being complied with by the EA and its contractors. Provisions of the IEE and EMP updated with Hazard Safety issues to fill in by the working contractors and submitting regularly helped verification of compliance at site and so far did not call for any remedial actions to mitigate and making any specific event reference to ADB.

The contractors will submit report on the implementation of safety issues on regular basis with information that they were conducting awareness program and meeting up the gaps. Environmental Covenants are being complied with.

4.0 Progress of Implementation of EMP

4.1 Compliance to Environmental Management Plan:

As EMP is a key requirement for obtaining Environmental Clearance from DOE. PGCB has submitted an EMP with EIA study. The function of EMP is to identify the impacts on environment because of construction work, how to mitigate the impacts and explain how monitoring will be carried out. All personnel related to construction work are made aware of the EMP by regular meetings and currently, compliance of EMP is monitored by PGCB and safety officers of contractor. So far construction works are running with full compliance of EMP.

Table 4.1: Compliance with EMP

Time	Parameter/Indicator	Location	Frequency	Compliance Status/Remarks
Before Construction	Soil sampling	Substation sites (particularly those with existing structure and equipment dismantled)	Once before construction	Completed
	Local recruitment of	Substations,	Monthly	On Going.

Time	Parameter/Indicator	Location	Frequency	Compliance Status/Remarks
	workers and staff	transmission lines		
	Orientation of Contractor(s) and workers on issues like HIV/AIDS, compliance to EMP, etc.	Substations and Transmission line	Once before construction, and as needed	Completed
Construction	Spraying of water to exposed land and before movements of construction vehicles	Substations and road basements when laying of underground cable to connect substations	<ul style="list-style-type: none"> Weekly at road basements (or as needed) Every day at substations sites during dry season and as needed during monsoon season 	Being complied
	Solid waste management	Substations, transmission lines	Every week	Being complied
	Danger and warning signs for safety of workers and the public	Substations and road basements affected by laying of underground cables, transmission lines	Once a month	Being Complied
	Announcement to the public of works schedule	Along the road basement affected by laying cables and substations	As needed	Being Complied
	Erosion control measures such as temporary shoring	Substations, transmission lines (if needed)	Once	Being Complied
	Smoke belching construction vehicles	Sub stations and transmission lines	Weekly	Being Complied
	Dust and noise level	Substations, transmission lines	Twice a month	Being complied
	Housekeeping	Substations, and transmission lines	Weekly	Being complied

4.2 Implementation of Environmental Safeguards Policies

A focal person has been appointed for supervision of Environmental Management Plan. Consultants will be appointed for ensuring compliance of the Environmental Monitoring and Safeguards Policies, if required. Meanwhile, personnel from Environment Department, PGCB is now in charge of maintaining Environmental Management and Safeguards policy.

Equipment and construction materials are stored in sheltered spaces. All laborers are provided with Personal Protective Equipment.

5.0 Safeguards Monitoring Results and Unanticipated Impacts

The pertinent issues with reference to the Environmental Monitoring Plan (EMP) has been identified and correlated with the environmental standards where necessary. Such findings along with any unanticipated impact not included in the EMP have been placed with recommendations in **Table-5.1**. Assistance to EA and its Contractors in taking corrective action/measures and the steps thus taken / to be taken has also been pointed out therein.

In that context, attention has been drawn to take necessary actions particularly in respect of Institutional Requirement and Monitoring Plan for the Post Construction and Operational Phase as per EMP approved by DOE & ADB for the project. This would include assessment of the training and awareness requirement on occupational hazard & safety issues for the operational teams and evaluation of injury and incident reports of the working contractors as well.

Table-5.1: Findings, Recommendations & Assistance to EA & its Contractors in Monitoring EMMP

Sl. No.	Issues & Findings	Actions Taken by
1.	Monitoring Mechanism: This was required for implementing the EMMP	Health and Safety Officers have been appointed by the contractor.
2	Environmental Clearance Certificate (ECC) Renewal: ECC need to be renewed.	ECC renewal is in process
3.	Health & Safety Hazard Check List (HSHCL):	Regular Tool Box Meetings are held at site for awareness of the workers. Contractors have been advised to prepare and maintain HSHCL and it is monitored by EA.
4.	Environmental & Social Components: Environmental and Social Components were to be implemented with due diligence as per provision of the EIA.	PGCB is aware about the status of mitigation measures of potential impact on Environmental and social components.
5.	Environmental Parameters (EPs) Quality Monitoring.	No effluent from site falls into the river.

Sl. No.	Issues & Findings	Actions Taken by
		Negligible amount of Green House Gas are emitted from the construction work.
6.	Sharing of information with Project Affected Persons (PAP) & Stakeholders' Response:	PGCB will continue keeping PAP informed in advance for remaining works on the ROW.

6.0 Conclusion and Recommendations

This monitoring was conducted at the three sites and explored the compliance status based on ADB safeguard policy, EMP provided in the EIA, Bangladesh Govt. and ADB loan covenant. If you're proposed locations have been identified and existing physical, biological and social conditions observed to get an insight about the base situation. In this stage of environmental monitoring, the Environmental Management System and Action Plan, Occupational Health and Safety, Workers' wellbeing, Biodiversity and Sustainable Management of Natural Resources have been observed through site specific field visit (monthly) and following the indicators stated in the checklist. In addition, compliance status has been provided made it clear indicator's base status during the construction phase of the project at the three selected sites.

The objective and tools of monitoring and measuring the progress of implementation of the EMMP is basically to fulfill the safeguard requirements of ADB as well as that of DOE. Thus continuous updating of EMMP is required for unanticipated impacts standing currently apparent if any. Further, contract document has adequate coverage of Environmental and Occupational Health & Safety (EOHS) issues.

1. The copies of own policy documents of the contractors and their subcontractors pertaining to EHS & OHS along with Tender & contract provisions will be reviewed and evaluated periodically and followed for due assistance in implementing the EMMP. The gaps, if identified in the field through periodic inspection and verification, will be duly addressed.
2. Due safety training and awareness program will be continued particularly on Fire Hazards & Safety Orientation courses.
3. EMMP is a dynamic mechanism and hence the provisions contained in the available tools like EMP of EIA doc will be revisited from time to time.
4. PGCB will also follow up with DOE regarding renewal of validity of their Environmental Clearance for renewal of ECC.
5. PMU always follow up with the contractors about implementation of the recommendations.