Fire Management Plan

1.1 Purpose

The action plan is for use in the event of a fire incident, if any at the proposed project. The primary objectives of plan are to save lives, prevent injuries and eliminate or minimize damage to property during the construction four new substations and laying transmission lines.

1.2 Major component of the Project

Major components of the project are- (a) Construction of GIS substations, (b) Construction of associated overhead transmission lines. Interventions under the Project are given in Table 1. The proposed 230 kV (initially charged at 132kV) double circuits transmission line from Anwara to Cox's Bazar, 132kV double circuits line from Cox's Bazar to Teknaf, 230kV double circuits TL from Kaliakoir SS to Bangabandhu Hi-Tech City, 230 kV four circuits extension of under constructed transmission line from Sikalbaha-up to Anwara SS, and LILO of Dohazari - Cox's Bazar 132kV four circuit line at Cox's Bazar (N) will help establish transmission infrastructure and evacuation of bulk electricity generated from upcoming coal and LNG based power plant in Chattogram Division to major load centers. This will help to meet up the rapidly growing demands of residential, commercial and industrial consumers in Chattogram and Dhaka Division and adjacent areas.

Table 1: Interventions under the Project

Substations				**Transmission Lines**	
Name of Substations	Land Size (acre)	SS Type	Required Bays	Associated Transmission Lines	Length (Km)
230/132/33kV SS: Anwara 2x250/350 MVA (230/132kV) 2x80/120 MVA (132/33kV) (Future 400 kV Provision)	20	GIS	230kV: LB=8; TB=2; BCB=1 132kV: LB=2; TB=4 33kV: TB=2	Anwara-Cox's Bazar (N) 230kV double circuit line (Initially Charged at 132kV)	105
132/33kV GIS Substation: Cox's Bazar 3x80/120 MVA (Future 230 kV Provision)	10	GIS	132kV: LB=8; CBB=2; TB=3; Spare=1; BCB=1 33kV: TB=3	Anwara-Cox's Bazar (N) 230kV double circuit line (Initially Charged at 132kV) LILO of Dohazari-Cox's Bazar 132kV four circuit transmission line	1.09
132/33kV GIS Substation: Teknaf 2x80/120 MVA	5	GIS	132kV: LB=2; TB=2; BCB=1 33kV: TB=2	Cox's Bazar to Teknaf 132 kV double circuit transmission line	73.10
230/33kV GIS Substation: BHTC 2x125/140 MVA	5	GIS	230kV: LB=2; TB=2; BCB=1 33kV: TB=2	Existing Kaliakair SS to BHTC 230kV double circuit transmission line (230kV Bay Extension at Kaliakair: 2 Nos.)	4.88
4 Nos.	40			Total (Transmission Line)	184.07

Proposed 230/132/33kV GIS substation (future 400kV) at Anwara will make regular grid connectivity from upcoming power plant and 230 kV transmission system. Proposed 132/33kV indoor GIS substation at outer side of Cox's Bazar will receive power from Anwara substation. Existing 132kV transmission line of Dohazari to Cox's Bazar will connect with proposed Cox's Bazar SS through 132kV four circuit lines as LILO. The proposed Teknaf 132/33 kV indoor GIS substation will receive power from Proposed Cox's Bazar (N) SS. Besides, proposed 230/33 kV GIS substation will be constructed at Bangabandhu Hi-Tech City located at Kaliakair, Gazipur, and power will receive from existing Kaliakair 400/230/132/33 kV substation. Total 184.07 km overhead transmission lines and four new sub-

stations will be constructed under this project. There is no underground transmission lines construction under this project. Because of the rerouting, the line will pass through Government owned/ fallow land and therefore number of sharecroppers or affected people remain almost unchanged, but if any issue arises during the implementation period, the issues will be resolved by the PD Office/ Consultant/ Contractor accordingly based on the Check survey reports as per the GoB and AIIB guidelines and the Fire Emergency and Safety Preparedness Plan will be duly updated.

1.3 Responsibilities

Phases	Staff	Responsibility	Monitoring Frequency
Construction Phase	Project Director	Overall responsibility	Weekly and monthly
	Fire Marshal Contractor/ Employees	Responsible for implementation and monitoring Compliance with PD's/PGCB's directions as per tender documents	Daily (During work)
Operation Phase	Executive Engineer/Asst. Engineer / Sub-Asst. Engineer	Overall responsibility during operation phase for substations and transmission lines	Schedule routine as per PGCB policy

1.4 General Principle of Fire-Fighting

(a) The safeguarding of life and safety of personnel shall take precedence overall other considerations when determining the actions to be taken in case of fire;
(b) The key to successful firefighting is to take action quickly to suppress, extinguish, or control the fire before it can become established or spread further;
(c) A fire requires three elements in order to start and to be sustained
- Heat
- Oxygen (Air)
- Fuel

These elements form the triangle of fire. If any one of these elements is removed the fire will be extinguished.
(d) All firefighting efforts should be based on the triangle of fire and should aim at eliminating one or more of the three essential elements.

1.5 Fire Preparedness and Planning

1) The project personnel must be prepared to respond to a fire at all times regardless of operating status:
   (a) The Contractor shall ensure that all fire-fighting equipment is maintained in a constant state of readiness and is available to personnel
   (b) It is the responsibility of the contractor and every supervisor to ensure that the employees under their supervision know how exit the project activity in a fire emergency. An ordinary evacuation depends on both adequate warning and employee awareness of the proper procedures. State of readiness by conducting weekly fire drills
   (c) The Contractor shall establish an emergency organization consisting of a selected number of employees, organized and trained, to deal effectively with fires, explosions, and similar occurrences
   (d) The Contractor shall ensure that procedures and check lists are maintained and kept current for after-hours notification of key personnel when the facility is operating at less than normal complement or shutdown
   (e) Proposed change in facility layout, materials, operation and construction shall be

reviewed by unit safety and fire prevent personnel as early in the planning stage as possible to establish necessary fire prevention and control measures

2) The fire marshal shall inspect the project activity daily to ensure that all fire- fighting equipment is in place and available for use, as well as to identify any potential fire hazards
    (a) Emergency exits and roots leading to them shall be clearly identified by signs
    (b) Current standard on construction, dimensions, lighting and number of exits required by safety codes shall apply in designating exits
3) A program of fire-fight training shall be established by the fire marshal under the direction of the Contractor. This program shall ensure that all personnel are familiar with:
    (a) The fire-fighting equipment at the project site
    (b) Fire- fighting techniques
    (c) The fire emergency preparedness plan.
4) The project fire-fighting plan shall be posted at various strategic locations throughout the project areas, including in the control room. This plan shall include a floor plan drawn to indicate the emergency exits, the procedure for sounding an alarm and evacuation instructions
5) If possible, the safety committee shall arrange for key emergency instruction and telephone numbers from plan to be highlight in the project's internal directory
6) A set of master keys providing access to all doors will be maintained in a special fire locker within the control room
7) Interface with local fire department
    (a) Contractor/PGCB management through the fire marshal, shall establish an interface with local fire department and shall establish an action plan for action plan for use in case the local fire department is called to respond to emergency
    (b) The action plan shall:
    (c) Establish a protocol for responding to an emergency call from the project site
    (d) Define the types of firefighting equipment to be used at the project site
    (e) Ensure that the fire department has access to the facility
    (f) Determine who will be in overall command of fire-fighting efforts.
    (g) Clearly establish actions to be taken by the fire department in response to different types of fire and different types of fire and different sections for example, oil storage tank fires, electricity fires and lubricant store fire etc.
8) The fire marshal shall ask the fire department to become familiar with the project and to participate in firefighting training conducted at the project sites including substation and transmission sensitive areas especially reserve forest.
9) The Contractor shall also ensure that the fire department can connect directly to the project site fire-fighting system without on the spot modifications.
10) Special fire-fighting procedures are to be posted at fixed firefighting operating stations such as the control room CO_2 flooding station, the separator room and so on.
11) Training
    (a) Fire awareness training shall be given to all project personnel as a part of new employee orientation;
    (b) Fire- fighting training and qualification examinations will be given to all project operating staff and to maintenance staff. Selected personnel will be required to attend advanced fire-fighting course;
    (c) Specialized training shall be provided to persons with responsibilities for maintenance of fire- fighting equipment, related systems and supplies;
    (d) The fire marshal must attend advance fire-fighting course and demonstrate a complete understanding of the project procedures and fire- fighting system;
    (e) The fire marshal shall coordinate with the local fire department and shall arrange for joint fire- fighting training at the project site.

12) Fire Drills
    (a) Each location shall establish an evacuation procedure to be followed in fire drills and emergencies
    (b) Each location shall have an alarm system or other suitable means to alert the occupants to the need for evacuation
    (c) The Contractor shall conduct weekly fire drills to:
        - Demonstrate the operational readiness or fire-fighting equipment;
        - During each drill, the fire pump and at least one fire hose should be operated for a minimum of ten minutes;
        - The fire hose used in weekly drill should be rotated.

Personnel Response to a fire alarm (Drill or emergency)

- Take whatever immediate steps are necessary and feasible to minimize any hazard in leaving the working area unattended.
- Do not use elevators for evacuation purposes.
- Do not reenter facilities until the "All clear" signal sounds or clear verbal instructions to reenter are given by responsible authority.

Supervisor Response to a fire alarm (Drill or emergency)

- Direct the evacuation of your area and account for personnel.
- Advice the responding authority of the situation and warn of potentially hazardous conditions.

If a fire Occurs

- In all cases, immediately raise the alarm by operating local fire alarm buttons
- Assess the situation to determine if the fire can be extinguished easily. If so attempt to fight the fire using available equipment
- If the fire is large or has the potential to become large:
  - If possible, isolate the air supply and/or the fuel supply to the fire. This may include shutting down vent fans, closing ventilators and closing fuel supply valves;
  - Stop any operating equipment. Shut down engines adjacent to the fire;
  - Bear in mind that shutting down the project activity completely will cause a black out and may make fire-fighting difficult;
  - Attack the fire using the appropriate equipment. Be aware of potential electrical shock hazards when using water to fight a fire

13) In all cases, the shift supervisor shall initiate a call to the local fire department and notify others according to the fire emergency notification and response lists in attachment.
14) If the fire is too large or cannot be readily extinguished by actions of one person, a firefighting team should be assembled under the direction of the person designated to be in charge. Based on the individual circumstances the approach will be some appropriate combination and sequence of the following:
    (d) Contain the fire. Use hoses or the means to restrict the fire to as small an area as is practically possible. If necessary, use boundary cooling.
    (e) Isolate the fuel supply by closing all supply valves to the equipment or area.
    (f) Isolate or minimize the air supply to the fire by closing vents and dampers and shutting down vent's fans.
    (g) Attack the fire using appropriate means.
15) After a fire
    (a) Post a fire watch for at least 30 minutes after any fire. In the case of larger fires, a longer fire watch may be necessary.
    (b) The operations supervisor or maintenance supervisor shall prepare an incident

report. The Contractor shall distribute copies of the incident report for any fire at the project site to the owner and to the PD, with a copy retained on file.

(c) The Contractor shall hold a debriefing to review the action taken during the fire and to emphasize "lessons learned". Any recommendations for changes in this procedure or in the project fire- fighting plan, as deemed appropriate, should be made to the safety committee.

16) Forest Fires

If underlying growth is left unchecked, or slash from routine maintenance is left to accumulate within right-of-way boundaries, sufficient fuel can accumulate that may promote forest fires. Recommended measures to prevent and control risk of forest fire include:

(a) Monitoring right-of-way vegetation according to fire risk;
(b) Removing blowdown and other high-hazard fuel accumulations;
(c) Time thinning, slashing, and other maintenance activities to avoid forest fire seasons; Disposal of maintenance slash by truck or controlled burning
(d) Controlled burning should adhere to applicable burning regulations, fire suppression equipment requirements, and typically must be monitored by a fire watcher;
(e) Planting and managing fire resistant species (e.g., hardwoods) within, and adjacent to, rights-of-way;
(f) Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow fire fighting access.

1.6 Records

(a) All records are to be maintained for three years.
(b) Superseded copies of the procedure are to be retained on file for three years.