



**North-West Power Generation Company Limited**  
**Annual Public Environmental and Social Report (2017-2018)**

**Sirajganj 225 MW Combined Cycle Power Plant**  
**Project (2nd Unit - Dual Fuel)**

**October - 2018**

## **1. About the Project:**

NWPGCL is already constructed two 225MW Combined Cycle Power Plant at Saydabad under Sirajganj district beside the Sirajganj 225MW Combined Cycle Power Plant (unit-1) with the bidder's finance. Out of two, Sirajganj 225 MW Combined Cycle Power Plant Project (2nd Unit - Dual Fuel) has been commissioned at 5<sup>th</sup> February 2018.

The configuration of the proposed Sirajganj 225 MW Combined Cycle Power Plant (2<sup>nd</sup> Unit-Dual Fuel) is multi shaft 1:1:1 consisting of one gas turbine, one HRSG and one steam turbine with by-pass stack for GT single operation of each unit. Natural Gas is the main fuel and HSD oil as alternative fuel. The guaranteed net output of the each power plant is 220 MW.

The following equipment are belong to Sirajganj 225MW Combined Cycle Power Plant (2<sup>nd</sup> Unit-Dual Fuel):

- 1) Gas Turbine
- 2) Steam Turbine
- 3) Generators
- 4) Heat Recovery Steam Generator (HRSG)
- 5) Gas Booster Compressor
- 6) 230kV Switchyard in Power Plant area
- 7) 230kV bay at the existing Sirajganj 230kV Switching station under PGCB
- 8) Underground 230 kV transmission line for power evacuation
- 9) Water treatment system(combined for 2<sup>nd</sup> and 3<sup>rd</sup> Unit)
- 10) Cooling Water System
- 11) Stacks (main and bypass) etc.

Natural gas or High Speed Diesel will be used as fuel for Gas turbine which will be coupled with Generator to produce around 150MW electricity. The requirement of Natural Gas for this two Power Plant is about 35MMCFD. Natural Gas will be supplied to the proposed power plant by Paschimanchal Gas Co. Ltd. (a Company of Petrobangla).The exhaust gas temperature of gas turbine will be about 500-600 degree Celsius. The exhaust gas with high temperature will be passed through Heat Recovery Steam Generator (HRSG) in which groundwater will be fed after treatment (demineralization& desalination) to produce the steam and then the steam will be passed through steam turbine coupled with generator to produce electricity of about 75MW. The temperature of the flue gas will be about 90 degree Celsius. The flue gas will be discharged to the atmosphere through main stack of adequate height.

The output voltage of the generators will be stepped up to 230 kV through a Step-up Transformer, to be installed close to generator outlets. This high voltage (230 kV) supply will be connected to the existing 230 kV Switching Station of PGCB through 230 kV underground cables.

## 2. Environmental Law

NWPGCL has been complied all the national and international environmental law. The details have been depicted in ESIA report. (<http://www.nwpgcl.org.bd/en/pages/eia-report>)

## 3. Social Law

NWPGCL has been complied all the national and international social law. The details have been depicted in ESIA report. (<http://www.nwpgcl.org.bd/en/pages/eia-report>)

## 4. Environmental and Social Permit

SL#	Name of the Permits	Organizations
1.	Trade License	Dhaka City Corporation
2.	License for River Water/Jetty	BIWTA
3.	Site Clearance	DoE
4.	EIA	DoE
5.	Permission of Acid/alkali Storage	Explosive Department
6.	License for Fire Permit	Fire Service
7.	License for Storage of CO2 (if required)	Explosive Department
8.	License for Storage of Diesel	Explosive Department
9.	License for Boiler	Chief Inspector of Boiler
10.	License for Propane Cylinder Storage (if required)	Explosive Department
11.	License for Compress Cylinder Storage (if required)	Explosive Department

## 5. Environmental and Social Action Plan

Depicted at ANNEX-A.

## 6. IFC Standards

NWPGCL has been complied IFC standards. The details have been depicted in ESIA report. (<http://www.nwpgcl.org.bd/en/pages/eia-report>)

## 7. The Equator Principles

NWPGCL has been complied Equator Principles. The details have been depicted in ESIA report. (<http://www.nwpgcl.org.bd/en/pages/eia-report>)

## 8. The EHS Guidelines

NWPGCL has been complied EHS guideline of IFC. The details have been depicted in ESIA report. (<http://www.nwpgcl.org.bd/en/pages/eia-report>)

## **9. ADB's Safeguard Policy Statement, 2009**

The project is not funded by ADB

## **10. Basic Terms and Conditions of Employment**

NWPGCL has an approved HR policy which is followed by all employees.

## **11. Core Labour Standards**

NWPGCL has an approved HR policy which is complying national labour law

## **12. Community Engagement Programs**

Depicted at ANNEX-B.

**ANNEX – A**  
**Environmental and Social Action Plan**

S. No	Elements	Gaps	Recommendation	Timeline	Deliverables	Frequency	Responsibility	Status upto October 2018
1	Environment and Social Management System (ESMS) and Policy	A formal EHS and Social policy at company level and dedicated ESMS for the Sirajganj complex has not been formulated by NWPGL.	(a) Formulate a company level Environment, Health & Safety and Social policy statement duly endorsed by senior management of NWPGL and communicated.	CP to first utilization	EHSS Policy by senior management	One time	NWPGL Management	It has already been done before Financial Closing
			(b) Submission of annual compliance certificate	Continuous Monitoring	Annual Compliance Certificate	Annual	NWPGL Management	Annex -c
			(c) Develop an Environment and Social Management System for whole site (considering operational Unit 1, proposed Unit 2 and other Planned Units). This should also include Stakeholder engagement plan, supply chain and grievance redress procedure. ESMS should also have elements pertaining to human resources management for direct and indirect employees for the project life cycle.	CP to first utilization	ESMS with all the procedures to the satisfaction of E&S Advisor of the investor (s)	One time	NWPGL Management/ Consultant appointed by NWPGL Management	It has already been done before Financial Closing
			(d) Legal Register to be developed for the entire Sirajganj Complex (as part of ESMS)	CP to first utilization	Legal Register is a part of the ESMS being developed	One time	NWPGL Management/ Consultant appointed by NWPGL Management	It has already been done before Financial Closing/ It is depicted in ESMS report

S. No	Elements	Gaps	Recommendation	Timeline	Deliverables	Frequency	Responsibility	Status upto October 2018
			(d) Organisation structure to include deployment of dedicated EHS and Social officer during the construction and operation phase. The compliance requirements to HR policies and procedures to be part of contract documents of contractor including compliance with accommodation standards.	CP to first utilization	Organogram for EHS & Social Management before contract sign with formal consent of EPC Contractor	One time	NWPGCL Management	It has already been done before Financial Closing/ It is depicted in ESMS report
			(e) Procedure for monitoring, review and reporting to be developed.	CP to first utilization	Procedure development Implementation is Continuous	Monthly Internal Audits	NWPGCL Management	It has already been done before Financial Closing/ It is depicted in ESMS report
			(f) GHG emissions disclosure	Continuous Monitoring	Report GHG emissions from the facility	Annual	NWPGCL Management	It will be disclose annually during operation phase. As S2 has declare COD on Feb, 2018, so GHG emission report will be share the next Feb, 2019.
			(g) Engage a suitably qualified independent consultant to help develop and implement the ESMS.	CP to first utilization	Appointment letter of consultant	One time	NWPGCL Management	It has already been done before Financial Closing/ It is depicted in ESMS report
2	Identification of Risks and Impacts	ESIA Report needs to be updated to incorporate the following elements	(a) Obtain prior permission from the Bangladesh Bridge authority before starting any up gradation works of Jetty.	CS	Before jetty upgradation	One time	NWPGCL Management	Provided in Public Environmental and Social Report -2017

S. No	Elements	Gaps	Recommendation	Timeline	Deliverables	Frequency	Responsibility	Status upto October 2018
		- HAZOP for plant equipments and utilities	(b) The baseline conditions updation for of the Jamuna Eco Park, social baseline with land use map of the project site covering 5 km around the site.	CP prior to first utilization	Updated ESIA Report	One time	NWPGCL Management / EAL engaged by NWPGCL Management	It has already been done before Financial Closing/ It is depicted in upgraded ESIA report.
		- Job Safety Analysis and Risk assessment	(c ) HAZOP for plant equipment and utilities to be included	CP prior to first utilization	HAZOP - will be a part of updated ESIA	One time	NWPGCL Management / EAL engaged by NWPGCL Management	It has already been done before Financial Closing/ It is depicted in upgraded ESIA report.
		- Social Baseline information						
		- Updation of baseline and impacts of Jetty on Jamuna Eco Park	(d) Job Safety Analysis and Risk assessment procedure to be included	CP to first utilization	JSA/HIRA for plant to be covered in the updated ESIA	One time	NWPGCL Management / EAL engaged by NWPGCL Management	It has already been done before Financial Closing/ It is depicted in upgraded ESIA report.
			(e ) ESIA to include air quality dispersion modelling and water balance (considering emissions from Sirajganj 1 and 2)	CP prior to first utilization	Updated ESIA Report	One time	NWPGCL Management / EAL engaged by NWPGCL Management	It has already been done before Financial Closing/ It is depicted in upgraded ESIA report.
			(f) ESIA to include Environmental Management Plans for construction and operations phase including the following – - Traffic Safety Management Plan - Security Policy - Construction Labour - Management Plan - Stakeholder Engagement Plan	CP prior to first utilization	Updated ESIA Report	One time	NWPGCL Management / EAL engaged by NWPGCL Management	It has already been done before Financial Closing/ It is depicted in upgraded ESIA report.

S. No	Elements	Gaps	Recommendation	Timeline	Deliverables	Frequency	Responsibility	Status upto October 2018
			(g) Environment and Social Management Plan to be developed based on the risks and impacts for Jetty upgradation	CS	Develop ESMP for within 60 days before Jetty upgradation	One time	NWPGCL Management / EAL engaged by NWPGCL Management	Already Provided in Public Environmental and Social Report -2017
3	Occupational Health and Safety	NWPGCL has not developed occupational health and safety procedures for construction and operation phase for compliance to legal requirements , IFC performance standards and World Bank EHS and Thermal Power Sector guidelines. Emergency response procedures has not been developed and implemented .	As part of the ESMS develop a comprehensive occupational health and safety procedures in line with applicable regulations and World Bank EHS Guidelines, for operation and construction phase of the project and ensure compliance.	CP to first utilization	Develop procedures in one month and implement throughout the project life cycle Emergency Preparedness to be developed as a part of the ESMS	One time	NWPGCL Management / Consultant appointed by NWPGCL Management	It has already been done before Financial Closing/It is depicted in ESMS report.

S. No	Elements	Gaps	Recommendation	Timeline	Deliverables	Frequency	Responsibility	Status upto October 2018
4	Environment Management	Environment management procedures for the construction and operation phase have not been developed.	(a) Ensure Contractor formulate an intensive environment monitoring programme during construction and operation phase of the project comprising of frequency of monitoring permitting comparison with the General Worldbank/IFC Environmental, Health and Safety Guidelines und EHS Guidelines for Thermal Power Plants.	CP to first utilization	Develop Procedure and formally communicated and agreed by EPC contractor	One time	NWPGCL	It has already been done before Financial Closing.
			(b) Install pollution control facilities during construction and operation phase of the project.	Continuous Monitoring	Implementation during construction and operation phase	Continuous	NWPGCL and Contractor	<ul style="list-style-type: none"> <li>• Continuos Emission Monitoring Station (CEMS) has been installed;</li> <li>• Low NOx burner has been installed.</li> </ul>
			(c) Environmental Monitoring Programme to be developed	CS - 60 days to first utilization	Development of environmental monitoring plan to the satisfaction of the E&S advisor of the investors	One time	NWPGCL and Contractor	Third party environmental monitoring team will be engaged during operational Phase
			(d) Implementation of the programs developed	Continuous Monitoring	Implementation during construction and operation phase	Continuous	NWPGCL and Contractor	Already Provided in Public Environmental and Social Report -2017
			(e) Identify DoE approved vendors and starts initiate signing an agreement with them for disposal of oily sludge to the vendors.	CS –Within 60 days of first utilization	Contract with the vendors	One time	NWPGCL	Already Provided in Public Environmental and Social Report -2017

S. No	Elements	Gaps	Recommendation	Timeline	Deliverables	Frequency	Responsibility	Status upto October 2018
			(f) Inventorize hazardous materials to be used during construction and operation of the project.	CS –Within 60 days of first utilization	Inventorisation and risk assessment	One time	NWPGCL	Already Provided in Public Environmental and Social Report -2017
			(f) Adequate labels, secondary containment and spill response kit should be provided wherever the hazardous material (HAZMAT) is used and workers should be trained to respond to accidental spills and emergencies due to hazardous material.	CP to first utilization	Development of HAZMAT procedure as part of ESMS and implement	One time	NWPGCL	It has already been done before Financial Closing/ It is depicted in ESMS report.
5	Community Health and Safety	Studies for identification of community health and safety impacts, ensuring infrastructure design and safety and offsite emergency management has not been identified and implemented	(a) Adequate studies for existing and proposed infrastructure, design and equipments should be undertaken by engaging a third party consultant should be undertaken	CS - 60 days to first utilization	Infrastructure design and safety report by engaging third party	One time	NWPGCL Management	Annex D
			(b) Offsite emergency preparedness plan should be developed.	CP to first utilization	Offsite Emergency preparedness and response plan to the satisfaction of Investor E&S Advisor	One time	NWPGCL Management	Attachment 1
			(c) Assist and collaborate with the potentially affected Communities (see Performance Standard 4) and the local government agencies in their preparations to respond effectively to emergency situations.	Continuous Monitoring		Annual	NWPGCL Management	Attachment 2

<b>S. No</b>	<b>Element s</b>	<b>Gaps</b>	<b>Recommendatio n</b>	<b>Timeline</b>	<b>Deliverables</b>	<b>Frequenc y</b>	<b>Responsibilit y</b>	<b>Status upto October 2018</b>
			(d) Document emergency preparedness and response activities, resources, and responsibilities, and should provide appropriate information to potentially affected Community and relevant government agencies.	Continuous Monitoring	Emergency preparedness and response Plan and its implementation to the satisfaction of Investor E&S Advisor	Continuous	NWPGCL Management	Attachment 2

## **ANNEX – B**

### **Community Engagement Program**

NWPGCL has Constructed Water Reservoir, Pipeline and Submersible Pump for wash room of Soydabad High School near the Power Plant.







## ANNEX – C

### Completion Certificate



নর্থ-ওয়েস্ট পাওয়ার জেনারেশন কোম্পানী লিমিটেড  
**NORTH-WEST POWER GENERATION COMPANY LIMITED**  
ISO 9001: 2008, ISO 14001: 2004 & OHSAS 18001: 2007 Certified  
(An Enterprise of Bangladesh Power Development Board)  
UTC Building (Level-3&4), 8-Panthapath, Kawranbazar, Dhaka-1215, Bangladesh  
Phone : 9145291-92, 9145427-28, e-mail: info@nwpgcc.org.bd, web : www.nwpgcc.org.bd

Memo No. 717-PD/Siraj225 MW (2<sup>nd</sup> Unit)/ NWPGCC/2017

Date: 29/11/2017

#### CERTIFICATE OF COMPLIANCE

To: Standard Chartered Bank- as Intercreditor Agent

From: North-West Power Generation Company Ltd- as Borrower

Dear Sirs,

**North-West Power Generation Company Limited–Common Terms Agreement dated 27-October, 2015 (the "Common Terms Agreement")**

1. We refer to the Common Terms Agreement. This is a Compliance Certificate. Terms defined in the Common Terms Agreement have the same meaning as used in the Compliance Certificate unless given a different meaning.
2. On the basis of Semi-annual environmental Audit, Environmental Health and Safety (EHS) condition has been improved. We confirm that EHS condition will be improved continuously in future.

  
(Mashuda Parvin)  
Manager (EHSS), Corporate Office  
North-West Power Generation Co. Ltd

  
(Engr. A.A. Akhtar Hossain)  
Project Director  
Sirajganj 225 MW CCPP (2<sup>nd</sup> Unit-Dual Fuel) Project  
North-West Power Generation Co. Ltd

# ANNEX D

EQMS

## Building Safety Certificate

This is to certify that the officer's Dormitory Building-01, officer's Dormitory Building-02, Staff Dormitory Building, G.M residence Building and Rest House (All three Storied Building) of **NWPGCL** (North West Power Generation Company limited) located at Shirajganj Power Station, Bangladesh, Has accomplished the requirement of initial Structural inspection report.

Therefore it can be said that aforementioned buildings could be considered structurally safe with the limitations of-

1. **2 KN/m<sup>2</sup>** Live load are recommended to be strictly followed;
2. The periodic maintenance works are recommended to be strictly followed;
3. Any types of hazards material/liquid should be kept away from the building;
4. No more vertical extension works allowed without written permission from concern structural Engineer.

*Guni*



Engr.Md.Osman Guni  
Structural Engineer  
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**North-West Power Generation Company Limited**

# **Off-Site Emergency Response Plan**

**For**

## **Sirajganj Power Plant**

**(Unit- 2 & Unit- 3)**

**Prepared By**



**EQMS CONSULTING LIMITED**

**SUIT# C1, HOUSE# 76, ROAD# 05, BLOCK# F, BANANI**

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## **Abbreviations**

IRT	Incident Response Team
IMT	Incident Management Team
ERG	Emergency Response Group
ERP	Emergency Response Plan
EISA	Environmental and Social Impact Assessment
DC	District Commissioner
BWDB	Bangladesh Water Development Board
NWPGCL	North West Power Generation Company Limited
OffSERP	Off-site Emergency Response Plan

# CHAPTER ONE: INTRODUCTION

## 1. Introduction

### 1.1 Background

This report presents the offsite Emergency response plan of North-West Power Generation Company Limited (NWPGL) prepared under the Sirajganj 225 MW Unit-2 & Unit-3 Combined Cycle Power Plant. The construction will be implemented by an Engineering, Procurement and Construction (EPC) contractor supervised by a NWPGL appointed Owner's Engineer (OE). The EPC contractor is to be involved in erection of new equipment including civil works and expected to sub-contract the civil, mechanical, electrical, instrumentation and control components to local Bangladeshi contractors. Prior to the construction, the EPC contractor will develop an Occupational Health, Safety and Environment Plan (OHSEP) that will address OHSE aspects associated with the each phases of the project.

During the operational phase, the NWPGL will develop, rollout and implement a formal OHSE management system for the operation of the power plant. The EPC contractor will need to ensure that their OHSE plan also complies with stipulated laws and regulations.

A well-constructed ERP will prevent a minor incident from becoming a disaster, save lives, prevent injuries and minimize damage to property and the environment. It facilitates a rapid and effective emergency response and recovery; provides assistance to emergency and security services; implements an effective evacuation plan if required and communicates vital information to all relevant persons involved in the transport emergency (both internal personnel and external agencies) with a minimum of delay. It outlines the necessary resources, personnel, and logistics, which allow for a prompt, coordinated, and rational approach to a transport accident.

### 1.2 Emergency Response Plan

A major emergency can be defined as an accident/incident that has potential to cause serious injuries or loss of life. It may cause extensive damage to property, serious disruption both in production and working of factory and may adversely affect the environment.

An Emergency Response Plan (ERP) is to provide a systematic approach to the protection of employees, assets and the environment from impact of serious incidents. A well-constructed ERP will prevent a minor incident from becoming a disaster, save lives, prevent injuries and minimize damage to property and the environment. The goals of the ERP are to:

- ❖ Provide for clear lines of authority and communication during incident and crisis events;
- ❖ Provide a means by which trained people and resources are available to those managing the incident or crisis event;
- ❖ Possible emergency events that have been identified for this Project are; immediate medical evacuation due to personnel injury, traffic accidents (road), leakage of

hazardous chemicals, civil disturbance/riot, terrorist events/threats and gas leak/explosion.

### 1.3 On-site & off-site Emergency

**On-Site Emergency:** If an accident/incident takes place in a factory, its effects is confined to the factory premises, involving only the persons working in the factory and the property inside the factory it is called as On-site Emergency.

**Off-site Emergency:** If the accident is such that its affects inside the factory are uncontrollable and it may spread outside the factory premises, it is called as Off-site Emergency.

### 1.4 Objectives of the Offsite ERP

The objective in emergency management planning is to ensure that everyone knows:

- ❖ what are the hazards and risk in the area due to the power plant;
- ❖ what and how to do in the event of an off-site emergency;
- ❖ Emergency preparedness for potential and unexpected incidents in the industries that affects outside area's people and properties.



# CHAPTER TWO: IDENTIFICATION OF PROBABLE DISASTERS AND CONSEQUENCES

## 2. Identification of Probable Disasters and Consequences

A disaster is a serious disruption, occurring over a relatively short time, of the functioning of a community or a society involving widespread human, material, economic or environmental loss and impacts. The combination of hazards, vulnerability and inability to reduce the potential negative consequences of risk results in disaster. Also, an emergency is a situation that poses an immediate risk to health, life, property, or environment.

In the Saydabad Union, the nature of emergencies /Disaster could be any of the following:

### 2.1 Identification of Likely Disasters

#### A. In plant Emergencies due to Accident

- Gas Leak/ Explosion

#### B. Natural calamities like

- Flood

#### C. Deliberate act of Man

- Kidnap and/or Extortion
- Civil Unrest or war threat

### 2.2 Consequences due to Disasters

The consequences due to disasters are as follows;

- Fire & Explosion
- Chemical and heat Burns to human and livestock
- Overpressure shocks to human and livestock
- Damage to private and public property

## CHAPTER THREE: EMERGENCY RESPONSE PLAN

### 3. Emergency Response Plan

#### 3.1 Approaches for OffSERP

OffSERP is made to prevent the disasters and if happen then to reduce the losses by quick post-disaster response. OffSERP improves the local or regional capacity to respond to disasters and public health emergencies, scaling up the actions with vulnerable communities in health promotion, disease prevention and disaster risk reduction.

##### 3.1.1 Pre-Emergency Planning

###### A. Hazard identification

The first step towards OffSERP shall be to identify potential on-site and off-site hazards such as gas leaks, spills, fire, explosion, transportation incident, pipeline ruptures, equipment failure, natural calamities, etc. and the types of damage caused by them. The hazard identification shall include:

- Information on toxicological, physical, and chemical properties of the substances being handled in the format of Material Safety Data Sheet (MSDS);
- Hazards to the installation shall also include Natural perils such as floods, earthquakes, tornados etc.

###### B. Risk assessment

The second step of the OffSERP process is to determine the risk of an incident associated with each hazard. The basic procedure in a risk analysis shall be as follows:

- Identify potential failures or incidents (including frequency);
- Calculate the quantity of material that may be released in each failure, estimate the probability of such occurrences
- Evaluate the consequences of such occurrences based on scenarios such as most probable and worst case events;
- The combination of consequences and probability will allow the hazards to be ranked in a logical fashion to indicate the zones of important risk. Criteria should then be established by which the quantified level of risk may be considered acceptable to all parties concerned;
- After assessing the risk, the "maximum tolerable criterion" must be defined and above which the risk shall be regarded as intolerable;
- The risk should also be made "as low as reasonably practicable" (ALARP) and least impacting the neighborhood.

The risk of disasters is either due to engineering failure or due to human failure or and due to sabotage and it can be done simply by identifying the following points:

- i. What are the hazards and risk?
- ii. What may go wrong?
- iii. How it may go wrong?
- iv. How likely is its occurrence?
- v. What would be the impacts?
- vi. What maintenance schedule would reduce its likelihood of occurrence?

### **3.1.2 Emergency Mitigation Measures**

The Administration needs to review the following overall preparedness/mitigation measures of incidence prevention at the power plant:-

- health safety and environment (HSE) policy;
- Proper layout and inter facility distances (the layout should not have any criss-cross movement of men and materials);
- Safety committees with fair participation of Union leaders and workers;
- Safety audits and risk assessment should be carried out as per the international standard;
- Work permit system (including confined space entry permit);
- Early warning alarm system;
- Fire protection (preferably automatic) and HSE Management system;
- All standby equipment's should be tried and operated periodically and recorded. Similarly back up power for safety equipment and instrument should be checked periodically and observations be recorded;

### **3.1.3 Emergency Drills and Mock Exercises**

- To evaluate the thoroughness and effectiveness of OffSERP, it is necessary to conduct periodic table top exercises full-scale or announced, and unannounced drills. Each site should hold drills in the night shifts, change shifts as well as during the day.
- Drills should present a variety of Emergency scenarios and designed to challenge each segment of the organization. Plans should be made to have periodic mass casualty exercises. These exercises should attempt to simulate as closely as possible a fire, explosion, or toxic agent release and comparison of the prescribed time lines and the actual received
- The warning system, first aid, evacuation procedures and the definitive treatment Procedures should all be tested periodically.
- Drills should ensure the participation of neighboring officials and agencies such as police, fire companies, ambulance service, and civil defense organizations.
- Testing and mock drills for off-site emergency plan shall be carried out as per the regulatory provisions.
- These mock drills will enable the unit/location to assess the capability of the individual and performance as a group. The frequent discussions and drills will help in eliminating the confusion and shortcomings, if any.

- Each Mock Drill should be recorded with observations and deficiencies to be rectified.

### 3.1.4 Training

- The management of OffSERP shall be easier to use if training material and general philosophy on emergency prevention and control are kept separate from the working plan.
- Training shall be imparted to all the personnel likely to be involved directly or indirectly in the emergencies including employees, contract workers, transport crew and security personnel.
- Contract personnel and contract laborer shall be allowed to start work only after clearance of attending and passing safety training.
- Local administration should ensure the monitoring of the above points. The best compliance is the pre-emergency preparedness or it can be designated as a part of prevention.

## 3.2 Components and Procedure of ERP

This ERP is intended to provide information, strategies and procedures relating to all aspects of emergency management which comprise:

- Prevention of emergencies;
- Preparation for emergencies;
- Response to an emergency and
- Recovery following an emergency.

### 3.2.1 Emergency Prevention

Project risks are prevented through implementation of risk mitigation measures to address events such as; gas main leak/explosion, traffic accidents, structural failure and other minor structural issues (e.g., pavement). The potential risks and measures to reduce each type of risk are given in the below.

**Table 3-1: Risk and Mitigation Measures**

S.N	Risks	Preventative Mitigation Measure
1.	Flooding	Regular checking and maintenance of River Training Works.
2.	Traffic Accidents (Road & Rail)	<ul style="list-style-type: none"> <li>▪ Traffic Control devices (road signs and markings, speed signs, stop signs, speed bumps and safety barriers)</li> <li>▪ Infrastructure maintenance and improvements ( including upgrades of road surfaces, rail lines, rail crossings, bridges and drainage</li> </ul>

3.	Spill/leak of Hazardous Materials in Land and Water	Fire Department personnel in the ERC will possess sufficient Hazmat training and have access to an appropriate number of Hazmat suits.
4.	Terrorist Events/Threats	<ul style="list-style-type: none"> <li>▪ Regular contact and updates from National intelligence agencies regarding threats.</li> <li>▪ Random security checks at the bridge ends during threats.</li> <li>▪ Bangladesh Army and Police personnel will be appropriately resourced and trained to quickly respond to terrorist emergency events.</li> </ul>
5.	Gas Leak/Explosion	<ul style="list-style-type: none"> <li>▪ Regular inspection and preventative maintenance of Gas main according to the Operation and Maintenance Manual.</li> <li>▪ Regular checking of Gas main pressure and pressure valves.</li> </ul>

### 3.2.2 Emergency Preparedness

Preparedness includes emergencies from fire related disasters and the necessary steps required to prepare for such emergencies. For this, it is required to design, deliver to the site, install, test and commission the fire-fighting and fire detection equipment to protect the steam & gas turbine, generating units and all associated equipment. The following **Table 3-2:** includes the list of preparedness measures to be included:

**Table 3-3: List of preparedness measures**

S.N	Area of Requirement	Preparedness Actions
1.	Design Requirement	<ul style="list-style-type: none"> <li>▪ Design should take into account basic operating policy</li> <li>▪ All automatic systems must have a manual initiation facility</li> </ul>
2.	CO2 Gas Fire Protection System	<ul style="list-style-type: none"> <li>▪ An automatic Carbon Dioxide (CO2) gas fire protection system should be provided in all machinery enclosures of gas turbine generating units except in the unit local control package.</li> <li>▪ The Protection System should consist of a fire detectors and an automated fire extinguishing mechanism once fire/smoke is detected.</li> <li>▪ Facilities for alternative manual actuation of the fire</li> </ul>

		<p>protection system should also be provided such that, when the manual mode has been selected the protection sequence will not proceed beyond the alarm stage without manual action by an operator.</p> <ul style="list-style-type: none"> <li>▪ High risk areas should be marked as “fire protection zones” and should have a separate fire protection system independent of others.</li> <li>▪ The protection system should be checked on a monthly basis to test their functionality. Any defect should be reported to the manger and should be replaced immediately.</li> </ul>
3.	Hydrant System	<ul style="list-style-type: none"> <li>▪ Water hydrants should be provided in the plant in such places that are susceptible to fire, such as, gas &amp; steam turbine generating units, HRSG, Gas station, Gas Booster, Chemical Plant electrical building, Outdoor transformers etc.</li> <li>▪ Firefighting water pool/ storage tank should have a capacity of minimum 4 hours of supply in case of worst case scenario.</li> <li>▪ Regular inspection of the hydrant system should be made to see if they are functioning properly or not. Any defect should be reported to the manger and should be replaced immediately.</li> </ul>
4.	Piping	<ul style="list-style-type: none"> <li>▪ The fire-fighting water mains should consist of buried piping of at least 150 mm diameter.</li> <li>▪ The underground pipe-work should be provided with an approved protective coating unless the pipe is manufactured from an approved non-corrosive material.</li> </ul>
5.	Portable Equipment	<ul style="list-style-type: none"> <li>▪ Portable equipment’s such as, CO2 extinguishers and dry chemical extinguishers of various weights and sizes should be provided at various locations of the plant</li> <li>▪ Regular inspection of portable extinguishers should be made and noted. Expired extinguishers should be replaced immediately.</li> </ul>

Source: CEGIS, 2015

### 3.2.3 Types of Training and Training Actions

A professional training needs to be given to the designated fire team. The training would include the following:

**Table 3-4: Type of training and training actions**

S.N	Type of Training	Training Actions
1.	Actions to be taken in the event of a fire	<ul style="list-style-type: none"> <li>▪ Use fire exit and educating workers and staffs of the nearest emergency evacuation zone.</li> <li>▪ Proper evacuation procedure in the event of a fire.</li> <li>▪ Training on locating emergency equipment's and use of portable fire extinguishers to extinguish fires.</li> <li>▪ Training on whom to contact in case of an emergency.</li> </ul>
2.	Handling of flammable liquids	<ul style="list-style-type: none"> <li>▪ Training on the safe handling and storage of volatile/flammable chemicals/oils.</li> <li>▪ Training on waste classification system and use of various color-coded bins for various waste disposals.</li> <li>▪ Training on the use of PPEs.</li> </ul>
3.	Emergency Drills	<ul style="list-style-type: none"> <li>▪ Regular monthly training on mock fire drills. Regular monthly workshop on emergency response and preparedness plan.</li> </ul>
4.	First-aid and medical assistance	<ul style="list-style-type: none"> <li>▪ Training on first-aid treatment for broken bones/fractures, burns, cuts/wounds, unconsciousness, breathlessness.</li> </ul>

In case of an emergency fire breakout, the Manager/AM of the EHS should be notified immediately who will delineate the information and responsibilities to other staff member. An emergency contact list should be prepared by the EPC contractor consisting of Manager's/ AM's contact details, Hospitals, Police, Ambulance services and other relevant contact details.

### 3.2.4 Emergency Response

An emergency response group (ERG) should be formed, lead by the Chief Engineer. The ERG would initiate and mobilize the incidence response team (IRT) in the event of an emergency.

### 3.3 Flood Contingency Plan

During the monsoon period in Bangladesh, there is considerable flooding of major rivers and waterways. These floods can be serious enough to threaten the Company's operations and this contingency plan has been developed to ensure that an effective planned response

can be made. This plan covers all areas of operations and considers the required interfaces with NWPGL's contractors, Government Bodies and other relevant organizations.

The following flood 'critical' areas, which would significantly affect the Company's Operations, have been identified as:

- Communications
- Transportation
- Power supplies
- Gas supplies
- Water supplies
- Community Health and Livelihoods
- Food supplies
- Health problems
- Availability of funds
- Protection of equipment and records
- Security
- Sewage systems

For the purpose of identifying the stages at which precautions and measures are to be taken, the alert stages have been color coded as follows:

**GREEN - ALERT** will take effect when adverse weather conditions have been reported, which may cause an increase of water in the major rivers or waterways giving rise to localized flooding.

**AMBER - ALERT** will take effect when there has been a significant increase in flooding of immediate or surrounding areas of Sirajganj Power Plant, office or accommodation to the extent that non-essential personnel will be required to move to safer locations.

**RED - ALERT** will take effect when, due to deteriorating conditions, either power supplies, communications, sewage systems have failed or security and health problems have become a major concern, and all personnel will be required to move to safer locations.

### 3.3.1 Actions for Specific Response Stages

#### **GREEN - ALERT**

<b>ERG Dhaka</b>
<ul style="list-style-type: none"> <li>• Contact operational sites and ascertain their current situation.</li> <li>• Maintain contact with the operational sites and contractors</li> <li>• Contact main contractors and advise them of the situation             <ul style="list-style-type: none"> <li>○ List 'Point of Contact' with contractors.</li> <li>○ Ascertain form contractors their status with regard to preparedness</li> <li>○ Identify developments within the Contractors organizations with regard to the</li> </ul> </li> </ul>

<p>situation</p> <ul style="list-style-type: none"> <li>• Gather flood related information from outside sources i.e. Union or village leader, Local NGOs, TV, Newspapers etc.,</li> <li>• Develop and distribute situation up-date reports to Remote Locations.</li> <li>• Liaise with medical health professionals or health department as to the perceived and current health situation in the affected areas.</li> <li>• Ensure that the appropriate emergency equipment is available if and when required.</li> <li>• Ensure that all vehicles are equipped with the relevant flood protection devices, exhaust extensions etc.</li> <li>• Maintain a list of vehicles that would be available during a flood situation.</li> <li>• Identify local national employees that have not been vaccinated against Typhoid</li> <li>• Vaccination program to include any affected location based contractors</li> <li>• Arrange vaccinations where and when required</li> <li>• Ensure that the transfer of sufficient funds for the purchase of any flood related equipment, services etc has been undertaken</li> </ul>
<p><b>Sirajganj IRT</b></p>
<ul style="list-style-type: none"> <li>• Contact the ERG Leader and inform him of the present situation at site.</li> <li>• Monitor flood levels in and around the location area on a daily basis.</li> <li>• Continue with daily up-dates to the ERG.</li> <li>• Identify requirements if situation starts to deteriorate, equipment, supplies etc.</li> <li>• Identify modes of transport for the evacuation of personnel</li> <li>• Assess security requirements.</li> </ul>

### **AMBER - ALERT**

<p><b>IMT Dhaka</b></p>
<ul style="list-style-type: none"> <li>• Instruct the ERG to instigate Amber Alert status.</li> <li>• Inform the NWPGL Chairman that the ERG has instigated Amber Alert status.</li> <li>• Formally suspend/restrict personnel movements into the country.</li> <li>• Increase frequency of ERG meetings to twice daily.</li> </ul>
<p><b>ERG Dhaka</b></p>
<ul style="list-style-type: none"> <li>• Contact the operational sites and ascertain their current situation with regard to flooding.</li> <li>• Maintain contact with the operational site on a daily basis and report to the ERG as to the ongoing situation.</li> <li>• Contact main contractors and advise them that the situation has deteriorated and that Amber Alert status has been instigated.</li> <li>• Compile a list of all essential and non-essential personnel with a view to evacuation/demobilization, submit to Managing Director.</li> </ul>

- Identify alternative modes of transport for the evacuation of personnel.
- Develop and distribute situation up-date reports.
- Liaise with medical health professionals as to the perceived and current health situation in the affected areas.
- Ensure that preventative medical supplies are available for issue to all employees.
- If required, mobilize Field Doctors (while on field break).
- Instigate a residence and office flood-monitoring program. Include results in daily situation up-dates.
- Monitor security in and around company premises, increase security
- Submit a list of all non-national employees to the Managing Director
- Ensure that the appropriate emergency equipment is distributed to relevant premises.
- Ensure that all vehicles are equipped with flood protection devices, exhaust extensions etc.
- Maintain a list of vehicles that are available for transportation of personnel.
- Arrange a shuttle service for personnel to and from the company premises.
- Monitor flood height and be prepared to move vulnerable equipment and records to a place of safety.
- Ensure that food stocks are increased and maintained to a level that will give a minimum of a 7-day contingency at all relevant company premises.
- Maintain sufficient drinking water supplies.
- Make investigations/flight bookings for non-essential personnel
- Ensure that the transfer of sufficient funds for the purchase of any flood related equipment, services etc has been undertaken.
- Assign signatory for Flood related AER's

#### Sirajganj IRT

- Monitor flood levels in and around the location area on a daily basis.
- Continue with daily up-dates to the ERG Leader.
- Mobilize relevant emergency equipment, supplies etc.
- Maintain list of personnel and update all changes.

#### **RED - ALERT**

#### IMT Dhaka

- Instruct the Emergency Response Team (ERT) to instigate Red Alert status
- Inform Chairman of NWPGL and relevant stakeholders that the ERG has instigated Red Alert status.
- Increase frequency of ERG meetings to twice daily.
- Contact relevant government agencies to arrange for evacuation of all personnel, families etc.

<b>ERG Dhaka</b>	
	<ul style="list-style-type: none"> <li>• Contact main contractors and advise them that the situation has deteriorated and that Red Alert status has been instigated.</li> <li>• Ensure that relevant funds are released for the evacuation process.</li> <li>• Initiate demobilization of non-essential personnel, equipment and materials as necessary.</li> <li>• Maintain list of contractor personnel leaving the country</li> <li>• Submit a list of demobilized personnel to Managing Director.</li> <li>• Ensure that transportation is available for the evacuation of non-essential personnel.</li> <li>• Maintain a list of vehicle movements during the evacuation period.</li> <li>• Arrange for Sirajganj Power Plant premises to be adequately protected/secured e.g. increase security measures</li> <li>• Move vulnerable equipment and records to a place of safety.</li> <li>• Ensure that all contractors held records appertaining to Sirajganj Power Plant operations are secured.</li> <li>• Maintain a list of premises have been evacuated and as to their security status</li> </ul>
<b>Sirajganj IRT</b>	
	<ul style="list-style-type: none"> <li>• Monitor flood levels in and around the location area on a daily basis.</li> <li>• Continue with daily up-dates to the ERG Leader.</li> <li>• Mobilize relevant emergency equipment, supplies etc.</li> <li>• Maintain list of personnel and update all changes.</li> <li>• Put on stand-by transport for the evacuation of personnel.</li> <li>• Increase identified security requirements.</li> </ul>

### 3.4 Important roles and responsibilities of various stakeholders

#### 3.4.1 Emergency Response Organizations

Three tier emergency response management has been developed for Sirajganj Unit-3 power plant. These are described below;

Operational Site IRT

- Operational site based incident management team personnel lead by Plant Manager
- Activated to implement the Emergency Response Plan for a Tier 1 incident

Dhaka based ERG

- Dhaka based incident management team personnel (ERG) lead by Chief Engineer
- Activated to respond to a Tier 2

incident

Dhaka based IMT

- Dhaka based lead by Managing Director of NWPGL
- Activated to respond to a Tier 3 incident

Preparedness ensures that arrangements and resources are maintained in a state of readiness to be mobilized and deployed for response and recovery to an emergency event.

The primary roles and responsibilities of the Emergency Response Group members are outlined below:

<b>Role</b>	<b>Responsibility</b>
ERG Leader	<ul style="list-style-type: none"><li>• Responsible for managing and co-ordinating the overall response of the ERG to the emergency situation. Reports to the IMT Leader.</li><li>• Responsible for mobilising the ERG and support personnel.</li><li>• Responsible for informing and updating the IMT Leader.</li><li>• Responsible for compliance with the actions and procedures laid down in this document for dealing with emergency situations.</li><li>• Responsible for obtaining authority from the IMT Leader for the release of information to Government, key Stakeholders and Media.</li></ul>
Operations & Technical Coordinator	<ul style="list-style-type: none"><li>• Reports to the ERG Leader and responsible to him/her for providing operational and technical information.</li><li>• Responsible for providing operational and technical advice, including production, drilling and subsurface, to the emergency site</li><li>• Responsible for all communications with the IRT Leader at the emergency site.</li><li>• Responsible for maintaining the information on the status boards.</li></ul>
Logistics and procurement coordinator	<ul style="list-style-type: none"><li>• Reports to the ERG Leader and responsible for providing and managing logistics support.</li><li>• Responsible for providing and co-ordinating air, marine and road transport requirements.</li><li>• Responsible for establishing contracts for logistic support.</li><li>• Provides access to contractor information on business or</li></ul>

	<p>technology (non HR) issues.</p> <ul style="list-style-type: none"> <li>• Responsible for procuring and transporting equipment, supplies and service as required by the emergency site.</li> </ul>
Health, Safety and Environment (HSE) coordinator	<ul style="list-style-type: none"> <li>• Reports to the ERG Leader and responsible for providing risk, health, safety and environmental information.</li> <li>• Responsible for compliance with legislation and obtaining authority from ERG Leader to inform and liaise with National Government and Regulatory authorities.</li> <li>• Responsible for providing OHSE advice &amp; support and information to the ERG and the IRT at the emergency site.</li> <li>• Responsible for co-ordinating office security.</li> <li>• Responsible for advising and maintaining the emergency responses in line with the Company emergency response procedures.</li> </ul>
Human Resources & Travel Services (HR) coordinator	<ul style="list-style-type: none"> <li>• Reports to the ERG Leader and responsible for providing information and managing all human resources matters pertaining to the emergency situation.</li> <li>• Responsible for arranging medical and hospital requirements including arranging meeting and transportation of casualties and medical cases to hospital.</li> <li>• Responsible for liaising with emergency site through the Operations &amp; Technical Coordinator and arranging and coordinating evacuation.</li> <li>• Responsible for providing welfare support and advice to employees and their families.</li> <li>• Responsible for arranging temporary accommodation, transportation and assistance for personnel being evacuated from emergency site.</li> <li>• Responsible for coordinating with the Logistics Coordinator onward travel for personnel being evacuated.</li> <li>• Responsible for communication with and notifying the next of kin.</li> <li>• Responsible for providing information about all personnel at the emergency site to the IMT HR coordinator.</li> <li>• Responsible for providing information to Contractor Companies about their personnel at the emergency site.</li> <li>• Responsible for coordinating the arrangements for the disposal of fatalities.</li> </ul>
Public Affairs (PA) Co-ordinator	<ul style="list-style-type: none"> <li>• Reports to the ERG Leader and responsible to him/her for gathering and preparing information and managing all communications with the Public and Media in line with Company policy.</li> </ul>

	<ul style="list-style-type: none"> <li>• Responsible for preparing the Media Holding Statement and obtaining authority from ERG Leader / IMT Leader for release.</li> <li>• Co-ordinates public affairs response.</li> <li>• Responsible for gathering information and preparing media statements to the National Media for the approval of the ERG Leader. Prepares Corporate and agrees the content of Country statements to the media.</li> <li>• Responsible for providing information to the Corporate PA coordinator to prepare International Media releases.</li> <li>• Responsible for arranging and coordinating media conferences. May be instructed by ERG Leader to issue statements.</li> </ul>
Reception	<ul style="list-style-type: none"> <li>• Reports to the OHSE coordinator and responsible for managing the reception of all personnel arriving and leaving the office.</li> </ul>

### 3.4.2 Contact Details

The OHSE Coordinator maintains and updates the emergency contact directory and distribute to the ERG members.

The duty ERG and Support Personnel are on 24-hour on call.

Although office, home and mobile telephone numbers are given in the weekly contact list, the policy is to contact ERG and Support members via their mobile number first. It is essential that people on duty fully understand their responsibilities and can be contacted 24 hours per day, on at least one of their listed numbers, during the whole period they are on call.

ERG members are responsible for maintaining a list of contact details of the personnel they would call out to support them in the event of the ERG requiring assistance. It is their responsibility to activate, inform, and direct any support personnel they consider necessary to provide them with the appropriate level of assistance. The respective ERG members are also responsible for briefing activated support personnel about the incident and giving them direction.

### 3.4.3 External Notification

There may be a requirement during an incident to notify and liaise with a number of national companies, authorities and agencies. It is important that the ERG maintains a record of all these external communications and liaises effectively to ensure overall co-ordination and to ensure they speak with one voice.

The OHSE Co-ordinator is responsible for advising the ERG Leader of the requirement for making the relevant contact and or notify to national Government and Regulatory authorities. The OHSE Coordinator is not authorized to release statements.

The HR Co-ordinator is responsible for making contact with the next of kin of all staff including contractors. The Public Affairs Coordinator is responsible for notifying the appropriate national authority regarding any fatalities.

In general, existing business channels of communication should be retained during an incident, but the ERG must retain overall responsibility and control for this communication. The range of contacts will inevitably vary greatly depending on the location of the affected site

#### Public Relation and Media

In the event of an emergency, the ERG will release all media information, warning information and updates. Information to be provided may include, but not necessarily be limited to:

- Nature of the emergency event,
- Likely duration,
- Alternative routes,
- Alternative transport options, and
- Advice to delay or cancellation of planned journeys.

### 3.4.4 External Stakeholders

#### 3.4.4.1 *Duties & Responsibilities of the Deputy Commissioner*

##### **Pre-Incident**

- The District Commissioner is overall in charge of all emergency operations to deal with Disaster arising anywhere in the district
- Assessment of possible major hazards in the district with special focus on major hazard industry/ installations, major railway/ road accidents, air raids and the natural calamities e.g. Earth quake, flood, lighting etc.
- Make the assessment of facilities and equipment available with all departments, organization and to suggest improvement for the up gradation of facilities and equipment for dealing with emergency.
- Formulate District Disaster Management Control plan in order to mitigate the effects of disaster so as to minimize the loss of life property & environment.
- Issue instructions, standing order to all departments, organisation, industries and services to prepare and act in accordance with the District Disaster Management Plan
- Be familiar with the major hazards industries and installation as well as possible effects of natural calamities.
- Ensure the training of all the members

- Ensure awareness in respect of the public emergency preparedness through News Paper, Radio, T.V. etc.
- Hold periodical mock/ training exercise to ensure optimum operational preparedness.

#### **During the Emergency / Incident**

- On getting information of the incident District Commissioner will contact the site incident controller or other sources of information for detailed information regarding the level of emergency.
- If he is satisfied that the emergency is major he will immediately put all the emergency services into action as per procedure laid down in the District Disaster Management Plan. After that he will rush to the scene of emergency if it is localized.
- On reaching the accident site he will assess the gravity of the emergency.
- He will ensure the arrival of all the emergency services at the site.
- Direct and co-ordinate the activities of various agencies involved in the emergency operation like firefighting, rescue operation, evacuation of employees and General public, shifting of injured to hospitals and management of casualties.
- Take latest information of the situation.
- Direct the rescue operation.

#### **After the emergency / incident**

- Declare the emergency to be over.
- Arrange for the rehabilitation of evacuated public.
- Ensure essential amenities for the public.
- Keep watch on any disease/ epidemics due to and after effects of the emergency.
- Arrange for the treatment rehabilitation of effected employees and public.
- Provide relief under public liability Insurance Act 1991.
- Investigate the cause of accident/ major emergency or constitute an investigating Committee.
- Arrange for the implementation of remedial action to prevent the recurring of emergency based on investigation.
- Keep records of weakness/ shortfalls/ lapses and causes of failure of disaster control management plan during emergency operation and suggest measures for improvement.

#### *3.4.4.2 Duties and Responsibility in Emergency Fire Service*

##### **Pre-Incident**

- To be aware of the location of major hazard units and potentially hazardous installation as well as the level of possible emergency.
- To be familiar with works incident controller and key personal of each unit and their role.
- To be familiar to deal with the leakage of flammable toxic substances.

- To keep a list of adverse effects of chemicals and methods to deal with emergency involving each chemical in each unit.
- Prepare the team to attend the emergency on each particular location.
- Review the adequacy of existing facilities available with fire service Dept., concerned major hazard units and suggest/ arrange to procure the additional equipment's / facilities.
- Review the adequacy of fire prevention arrangements in each unit (before and after the installation) and suggest making adequate fire prevention arrangements.
- Participate in mutual aid programme/ scheme with major hazard units and suggest for improvement in the existing plan.
- Involve in on site emergency rehearsals/ mock drills.
- Prepare the rescue plan for each unit in consultation with the management and review the arrangements for rescue operation suggest to procure or arrange to procure essential equipment's for rescue operation.
- Identify roads/ routs of access and escape.
- Impart training to the firefighting staff including the employees of major hazard units.

#### **During the Emergency / Incident**

- After getting the information, quickly rush to the scene of emergency.
- Take in charge of firefighting and rescue operations from works main controller and start the firefighting operation.
- Assess the level of emergency and inform district administration to take further action for evacuation.
- Evacuate the employees inside the building/ plant.
- Co-ordinate firefighting activities of mutual aid group and the concerned unit.
- Co-ordinate the operation to stop leakage or release of flammable / toxic substance.
- Keep in touch with site incident controller of the industry and district administration.
- Advise the district administration for the development of additional firefighting personnel/ requirement of additional equipment etc.
- Seek help of police/ civil defense in firefighting operation.
- Safe guard the adjacent property/ population from fire by confining the fire spread.
- Search for injured/ trapped/ buried persons and casualties and take them out for first aid/ medical aid.

#### **After the emergency / incident**

- Ensure that there is no chance of re-ignition of fire/ leak / release at site before leaving the site.
- Search for injured / casualties etc.
- Make record of damages/ casualties / losses.

- Make record of firefighting facilities used.
- Record the lapses/ promptness in action during firefighting operation.
- Check the conditions of drains/ Storm drain for the presence of harmful substances.
- Investigate into the cause of fire in collaboration with investigating officer and suggest remedial measures for future.

#### *3.4.4.3 Duties and Responsibility in Emergency Police*

##### **Pre-Incident**

- To help the planning team in the preparation of emergency plan.
- To be aware of nature, causes and consequences of emergencies.
- To be familiar with Major Hazard Units with personal visit.
- To set up and maintain the emergency control room.
- To stop/ control of dwelling in the vicinity of Major Hazard Units.
- To control the encroachment/ congestion on the roadways leading to Major hazard unit.
- Constitute teams to deal with emergency in different area on call and assign duties to
- Arrange for the participation in rehearsal.
- Arrange for public address system and siren.
- Explain evacuation procedure to general public.
- Make arrangement for evacuation and dealing with Injured/ casualties.
- Plan for traffic control for different areas.

##### **During the Emergency / Incident**

- Rush to the scene of emergency.
- Be in regular contact of control room and Deputy Commissioner.
- Take charge of firefighting, rescue and evacuation operation.
- Keep in touch with works main controller of affected unit.
- Arrange to send the Injured/ affected persons to hospitals.
- Arrange to control the traffic.
- Arrange to cordoned off/ barricade the affected area.
- Maintain the law and order in the area.
- Declare and arrange for the evacuation of general public to a predetermined safe place.
- Communicate with General public.
- Arrange to guard the public property in the evacuated area.
- Search the affected area for injured/ affected person and casualties in the unit and Outside the unit.

### **After the emergency / incident**

- Arrange for the rehabilitation of evacuated person.
- Arrange to put the traffic to normal.
- Communicate the situation to general public.
- Arrange to give information of Injured/ affected persons and casualties to their relatives.
- Keep the record of injured / casualties.
- Set up communication center to give information to the relatives of affected persons.
- Keep watch on law and order situation.

#### *3.4.4.4 Duties and Responsibility in Emergency Health Department*

##### **Pre-Incident**

- Keep a list of Major Hazard Units and hazardous chemicals used.
- Prepare a list of antidote for each chemical.
- Have the estimate of affected persons in case of emergency in each major hazard unit.
- Make necessary arrangements for first aid and affected people in various hospital/ nursing home.
- Keep liaison with all nursing homes and hospitals and have the information of their capabilities along with services available.
- Send notices to all the nursing homes/ hospital to be prepared for emergency specifying the services to be rendered during emergency.
- Plan for medical services area wise i.e. select / appoint the hospitals for each area or unit.
- Arrange/ nominate the medical crew to reach at site for medical aid.
- Arrange for ambulance/ mobile medical aid for affected site.
- Arrange to plan adequate beds for affected persons.
- Arrange to deal with casualties.
- Plan for additional capacity in hospitals.
- Arrange for rehearsal and training of medical staff.
- Arrange for the buffer stock of medicine.
- Establishment of information center capable of providing relevant information in an emergency on the diagnosis , treatment and rehabilitation of persons injured by chemicals.
- Take part in exercise with the other relevant authorities involved in emergency plan.

##### **During the Emergency / Incident**

- On getting information rush to the hospital.
- Arrange for relevant emergency medicine, blood and antidote in sufficient quantity.
- Keep in constant touch with D.C./ SP/ AD to know the scale of emergency and no. of people affected.

- Send the medical crew and ambulances to the affected site for onsite medical aid.
- Ensure the arrival of all medical staff to their pre-assigned locations.
- Inform the various hospital to arrange for immediate medical aid.
- Direct the injured / affected people to different hospital as per premedical plan.
- Arrange for the treatment for injured and affected person.
- Take account of the persons attended in the hospitals and admitted for treatment.
- Deal with casualties.
- Inform any development or change to Deputy Commissioner.

#### **After the incident**

- Take account of the affected / admitted persons.
- Arrange for the treatment of the side effects (long term)
- Attend the injured people in hospital.
- Report all significant development to D.C.
- Arrange to release the people after treatment.
- Record all developments/ treatment given during emergency.
- Give preventive advice and medicine to public.
- Advise the people and district authorities to take particular precaution related with health, in future i.e. preventive measures and medicine.
- Arrange medical camps in affected are for the treatment of general public and study purpose.
- Ensure the availability of essential/ life saving drugs in affected area.
- Arrange for follow up medical examination.

#### *3.4.4.5 Duties and Responsibility in Emergency Union Leader/Chairman*

##### **Pre-Incident**

- Assist to hold a hazard, vulnerability and risk analysis at surrounding off site area.
- Assist to identify the most vulnerable area or people at high risk by sex, age, physical-ability, social status, occupation and economic status, compile the list of people at high risk.
- Assist to increase efficiency in developing local warning system, risk reduction programming, rescue and recovery strategy and awareness raising strategy.

##### **During the Emergency / Incident**

- Notify the local people regarding the emergency situation
- Assist as per the requirement

##### **After the incident**

- Assist as per the requirement

#### *3.4.4.6 Duties and Responsibility in Emergency Local NGOs*

##### **Pre-Incident**

- Assist to implement the short, medium and long term action plan for risk reduction as well as review the progress of the implementation.

#### **During the Emergency / Incident**

- Assist to provide logistic support during emergency period.

#### **After the incident**

- Assist to plan and implement post emergency livelihood restoration programs

#### **3.4.5 Details of External Stakeholders**

<b>Sl No</b>	<b>Name</b>	<b>Designation</b>	<b>Organization</b>	<b>Contact Info</b>
1.	KamrunnaharSiddiqui	District Commissioner	GoB	01713202049
2.	Md Abdul Hamid	Deputy Assistant Director	FSCD	01730002549
3.	MirazUddinAhammed	Police Super	Bangladesh Police	01713374030
4.	Dr. KajiShamim Hossain	Civil Surgeon	Health Department	01769957153
5.	Md. TabidurRahmanTalukdar	Executive Engineer	Department of Public Health	01711360367
6.	Md. Nabidul Islam	Chairman	Saydabad Union	01712351930
7.	Md. HabibullahBahar	Executive Director	MMS	01713002850

### **3.5 Implementation of off-site Emergency Response Plan**

Emergency plan is a highly multidisciplinary approach, which includes multi-sectoral activities with an aim to prevent risk to the human or property related to the project. Therefore, the off-site emergency response plan must be implemented in a comprehensive, systematic, planned and documented manner.

Off-site emergency response plan should be disclosed to the concerned authority (e.g. community people, Union chairman, member, district commissioner, Police in charge, fire service authority, upazila medical personnel etc) through stakeholder consultation, public consultation meeting. Given below the implementation schedule of the Off-site emergency plan that will be disclosed to the concerned authority mentioned in the ESIA Report.

**Table 3-5: Disclosure of Off-site emergency plan**

<b>Stakeholders</b>	<b>Implementation Schedule</b>	<b>Responsible Agency</b>
District Commissioner	Need basis	Emergency Response Group (ERG) Leader
Fire Service	Need basis	Health, Safety and Environment (HSE) coordinator
Police Super	Need basis	Emergency Response Group (ERG) Leader
Civil Surgeon	Need basis	Emergency Response Group (ERG) Leader
Executive Engineer	Need basis	Emergency Response Group (ERG) Leader
Chairman	Need basis	Health, Safety and Environment (HSE) coordinator
Community	Bi-annual	Health, Safety and Environment (HSE) coordinator

### **3.6 Monitoring**

The monitoring is one of the important tools for proper implementation of the off-site emergency response plan. The monitoring plans for implementing off-site ERP comprises as follows;

- Updated off-site emergency plan must be shared bi-annually with the concerned stakeholders. It should be ensured whether the community is getting the update off-site emergency plan
- Maintain the communication and coordination with the relevant stakeholders in emergency situations.
- Deriving off-site emergency plan for identified risks for each of the Project activity and along with responsible agency to execute each measure when required.

## Annexure 1: Details to Be Furnished In the Off-Site Emergency Plan

1.	The types of accidents and release to be taken into account
2.	Organizations involved including key personnel and responsibilities and liaison arrangements between them
3.	Information about the site including likely locations of dangerous substances, personnel and emergency control rooms
4.	Technical information such as chemical and physical characteristics and dangers of the substances and plant
5.	Identify the facilities and transport routes
6.	Contact for further advice e.g. meteorological information, transport, temporary food and accommodation, first aid and hospital services water and agricultural authorities
7.	Communication links including telephones, radios and standby methods
8.	Special equipment including firefighting materials, damage control and repair items
9.	Details of emergency response procedures
10.	Notify the public.
11.	Evacuation arrangements
12.	Arrangements for dealing with the press and other media interests.
13.	Longer term clean up

## References

1. CEGIS. Environmental Impact Assessment (EIA) of the Proposed Sirajganj 225MW Combined Cycle Power Plant Project (Dual Fuel-3rd Unit), Volume I: Final Report,2015
2. Off-site Emergency Management Plans of Districts of India.
3. Technical background document for offsite consequence analysis for anhydrous aqueous ammonia, chlorine, and sulphur dioxide , Chemical emergency preparedness and prevention office, U.s. Environmental protection agency, April 1999
4. Guidelines for On-Site and Off-Site Emergency Plans for Factories & Industrial Units in Himachal Pradesh. HP State Disaster Management Authority, Government of Himachal Pradesh, Disaster Management Cell, Department of Revenue, 2012





North-West Power Generation Company Limited

**Implementation of Off-Site Emergency  
Response Plan  
For  
Sirajganj Power Plant  
(Unit- 2 & Unit- 3)**



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## 1. Introduction

This report presents all the stakeholders identified and consulted and elaborates on the main issues and concerns rose by these stakeholders. Views from the general public, local leaders, surrounding institutions, communities and development partners who are interested in and/or would be potentially affected by the proposed project were consulted during public meetings. The consultations were held to ensure that interested and affected parties were informed about the off-site emergency response plan of the power plant. The consultations allowed stakeholders to present their views concerning the off-site emergency response plan of the power plant. Note down stakeholders' views and preferences were essential to inform the identification of risks and drawing effective mitigation measures that are presented in this report.

### Objectives of the Implementation of Off-site Emergency Response Plan

The overall objective of the Implementation of the Off-site Emergency Response Plan was to disseminate the information of this plan to the concerned stakeholders. The specific objectives were to:

1. Inform to the local people what are the hazards and risk in the area due to the power plant;
2. What and how to do in the event of an off-site emergency;
3. Emergency preparedness for potential and unexpected incidents in the industry that affects outside area's people and properties.
4. Reduce problems of institutional coordination; and
5. Consult stakeholders to gather the information needed to complete the assessment and getting their valuable feedback.

## 2. Information Disclosure and Consultation

The stakeholders were consulted include local people, a community in the vicinity of the project area, local elected representatives and other external stakeholders such as government officials. The details of consultations held with issues raised or discussed and suggestions provided by the respective stakeholders are presented in the following sub-sections. Photographs of the stakeholder meeting are shown in Annex B.

The method selected for consultation was basically designed keeping in mind the profile of the stakeholders, type of information desired and level of engagement required. In each consultation session, the consultant introduced themselves, introduced the project and the purpose of engagement with the respective stakeholder. Disclose of the off-site emergency response plan to the concerned stakeholder through public consultation meeting. Also the primary methods followed in the consultation process are:

- Key Informant Interview (KII);
- Public Consultation.

### A. Views of Mr. Nabidul Islam, Chairman of Saydabad Union, Sirajganj

Mr. Nabidul Islam has been playing role in the Saydabad Union as a Chairman. He pointed out the following concerning issues:

- Transportation system of the area needs to be developed;

- Waste materials (Solid, hazardous, liquid) need to be properly dumped and managed;
- Project authority should be concerned about the Gas pipeline leakage, noise pollution etc.

**B. Views of Mr. Mohammed Daud, Officer-in Charge (Police), Bangabandhu Bridge Police Station**

Given below the views of Mr. Mohammed Daud;

- Frequent and need basis communication is incurred with the responsible person of NWPGL.
- Emergency issues of the power plant have already taken this matter into account.
- Periodical project site visit and security maintenance work is going on.
- We are always aware of any kind of emergencies that may violate the law and security of the project surrounding area.

**C. Views of Mr. Md. Abdul Hamim Station Officer, Upazila Fire Service and Civil Defense**

Mr. Md. Abdul Hamim said that “We are concerned about the emergency situations of the project site. We are along with NWPGL planning for establishing sub-station adjacent to project site for ensuring immediate response in emergencies”.

**D. Views of Mr. Md. Habibullah Bahar, Executive Director, Local NGO, Manab Mukti Sangstha (MMS)**

Mr. Md. Habibullah Bahar in his opinion stated that (in reference to environmental pollution) the waste generation points should be identified and disposed of in designated place. He also said that “MMS is informed with the emergency plan and ready to provide any logistic assistance during emergencies. We have our own disaster contingency plan. Thus, we can engage more efficiently in any emergencies. We are experienced in water and sanitation program; search and rescue program during any disaster period”.

**Community Engagement with Off-site Emergency Plan**





Communities adjacent to project site are periodically made aware about the potential emergencies.

Community meeting/consultation is conducted periodically to let the community people know about the potential emergency situations, survive and rescue procedures.

### 3. Public Consultation Meetings (PCM)

The public consultation meeting was held on 15 March 2017 at Saydabad Union. The proceedings commenced at 3:00 PM. The meeting was attended by a total of 41 people, which represents the Union chairman, UP members, local people, student, Business personnel, Teacher. Public consultation meeting minutes have been given in

Table -1. Photographs and attendance sheet of the public consultation meeting is shown in Annex-A& Annex C in this report.

**Table -1: Brief overview of the Public Consultation Meeting**

SL#	Name	Occupation	Comment/Question
1.	Nabidul Islam	Union Parishad Chairman, Sayadabad Union	- Project proponent should be concerned about the noise pollution. He said that noise pollution decreases than the before. He added that Gas pipeline should be checked and maintained carefully.
2.	Mr. Md. Abdul Aziz Mondal	Up member	- Power plant increases the socio-economic development of that union. Also the electricity demand will be fulfilled as well. - Sound pollution should be checked in acceptable level. - The emergency contact number should be listed in a banner and inform to the local people so that they can contact in an emergency.
3.	Mr. Md. Shafiqul Islam	Consultant (Environment and Disaster Management)	- An emergency is a situation that poses an immediate risk to health, life, property, or environment. Emergency response plan is such kind of plan which protect the human and environment

SL#	Name	Occupation	Comment/Question
		Expert)	<p>from any accident or any emergency.</p> <ul style="list-style-type: none"> <li>- Offsite emergency means which affects inside the plant and spread outside of the plant premises.</li> <li>- The main objectives of this public consultation are to disclose the offsite emergency response plan to the people living in the adjacent and nearest area of the power plant so that they can aware and prepare themselves in an emergency.</li> <li>- The possible off-site emergency can be Gas pipeline leakage, fire incident, air, water, sound and soil quality pollution, accident, or natural disasters such as earthquake, flood etc.</li> <li>- The gas pipeline shall be checked. Air, noise, water quality will be monitored according to international and Bangladesh standard.</li> <li>- Fire alarm system, fire extinguishing equipment, smoke control equipment, fire and emergency evacuation plans, drills, assistance to the fire brigade will be assured if any fire incidents happen.</li> <li>- Emergency contact number including Police in-charge, Upazila Fire station, Upazila Medical service, Union parishad chairman etc. are listed and local people can collect easily from Union parishad or NWPGCL.</li> </ul>
4.	Seikh Abdul Karim	Environment, Health and safety specialist of NWPGCL	<ul style="list-style-type: none"> <li>- NWPGCL has already formulated an emergency response group comprising health safety and environment specialist, fire officer, operational and technical coordinator etc. for any emergency due to power plant.</li> <li>- Hazardous materials are handled in accordance with the safety data procedure as mentioned in the safety data sheet of the particular materials.</li> <li>- Equipment with low noise outputs where possible is used.</li> <li>- Gas pipeline are checked regularly so that any leakage cannot be occurred.</li> <li>- Building Code has been followed strictly in designing and constructing the buildings, and other civil structures.</li> </ul>
5.	Mr. MoinUddin	Union Land Officer	<ul style="list-style-type: none"> <li>- Socio-economic development of the area will be increased due to establishment of the power plant.</li> <li>- If possible another Public consultation meeting should be arranged in adjacent area of the power plant.</li> <li>- Emergency signboard listing up contact number should be placed in a suitable location of the Saydabad Union.</li> </ul>

SL#	Name	Occupation	Comment/Question
6.	Mr. Ganesh ChnadraMondal	Local Businessman	<ul style="list-style-type: none"> <li>- We know any construction/development work may have positive and negative impacts on environment or human. But it should be managed in a sustainable way so that impacts can be minimized.</li> <li>- Electronic media (e.g. newspaper, Television) can be informed if any pollution such as water, air, soil will occur in extensively.</li> </ul>
7.	Mr. Md. SabujTalukdar	Student	<ul style="list-style-type: none"> <li>- What will be done by the project authority if any people injured due to the power plant?</li> <li>- Noise pollution should be minimized</li> <li>- Emergency contact number, Siren, Hazard Notification, safety measures must be ensured by the project authority.</li> </ul>
8.	MdSohel	Service holder	<ul style="list-style-type: none"> <li>- People of the area are welcomed to the establishment of the power plant. They are much happy to see the development of their region. But they don't want any unexpected event or incidents which affect them due to the power plant. However, proper safety measures and what are actually needed for safe and sound completion of the power plant should be ensured by the project authority.</li> <li>- Project authority should be concerned about Soil contamination, water quality degradation, noise, accident, leakage of gas pipeline etc.</li> </ul>

## ANNEX A: Photographs of Public Consultation meeting



Opening speech by the Union Parishad Chairman, Saydabad Union



Briefing about the Off-site Emergency Response Plan of the Sirajganj Power Plant (Unit-2 & Unit-3) by the Consultant



Presenting emergency issues and safety measures of emergency incidents of the Power Plant by the EHS Expert of NWPGL



Glimpse of Participant question-answer session about the off-site emergency response plan



Participants sharing his view about the off-site emergency response plan



Glimpse of the participants in the public consultation meeting



Making Participant's attendance list



Closing speech of the public consultation meeting by the Consultant

## ANNEX B: Photographs of the Stakeholder consultation meeting



Consultation with Mr. Nabidul Islam  
Chairman of Saydabad Union Parishad

Couldn't take the photo with concern of the  
responsible person

Mohammed Daud  
Officer-in Charge, Bangabandhu Bridge Police  
Station, Contact No: 01713374047



Consultation with Mr. Md. HabibullahBahar  
Executive Director, MMS

Couldn't take the photo with concern of the  
responsible person

Md. Abdul Hamim  
Station Officer, Upazila Fire Service and Civil  
Defense, Contact No: 01724387094

**ANNEX C: Attendance Sheet of Public Consultation Meeting**

Public Consultation Meeting				
Off-Site Emergency Response Plan for Sirajganj Power Plant (Unit- 2 & Unit- 3)				
Location		Date and Time		
Veduffa Saydabad union		15/03/2018	3:00 PM - 5:00 PM	
List of Participants				
SL #	Name (নাম)	Occupation (পেশা)	Mobile No: (মোবাইল নম্বর)	Signature (স্বাক্ষর)
1	শ্রী: নবী হুসেইন ইমাম	ডেপুটি মাদ্রাস	০১৭১২৩৫১৭৩০	
2	শ্রী: মো: মাহমুদুল হক	ইউনিয়ন মাদ্রাস		
3	শ্রী: সিরাজুল ইসলাম	ইউনিয়ন মাদ্রাস	০২৭১১০২০৬২৬	
4	শ্রী: মো: মাহমুদুল হক	ইউনিয়ন মাদ্রাস	০২৭০৪৪২২৪৭৬০	
5	শ্রী: মো: মাহমুদুল হক	ইউনিয়ন মাদ্রাস		
6	শ্রী: আব্দুল হান্নান	ছাত্র	০১৭১৬-৩৭৪৬৪৪	
7	শ্রী: স্বাধীন হোসাইন	কৃষকারী	০১৭৩৭-২৫৩৯৬১	
8	শ্রী: মোহাম্মদ হোসাইন	কৃষকারী	০১৭৩১-১৭২৩০৭	
9	শ্রী: মোহাম্মদুল হক	ইউ.পি. মাদ্রাস	০২৭১৬-৭৪৬০২৪	
10	শ্রী: মো: মাহমুদুল হক	মাদ্রাস	০২৭৭৫৩০৭২৭	
11	শ্রী: মো: মাহমুদুল হক		০২৭৬৫১-৭৬০৬৬৬	
12	শ্রী: মো: মাহমুদুল হক	মাদ্রাস	০২৭১১-৩৫১৬৫২	
13	শ্রী: মো: মাহমুদুল হক	ইউনিয়ন মাদ্রাস	০১৭১৭-০৫১৩১৬	
14	শ্রী: মো: মাহমুদুল হক	ইউনিয়ন মাদ্রাস		
15	শ্রী: মো: মাহমুদুল হক	মাদ্রাস		
16	শ্রী: মো: মাহমুদুল হক			
17	শ্রী: মো: মাহমুদুল হক	চাকরী	০১৭২৭৬০৭২৪২	
18	শ্রী: মো: মাহমুদুল হক	চাকরী	০২৭০৬২০২২০০	
19	শ্রী: মো: মাহমুদুল হক	উদ্যোক্তা	০১৭৩৪৩৩৫৬৭৪	
20	শ্রী: মো: মাহমুদুল হক	ইউনিয়ন মাদ্রাস	০২৭৭২২০৬৬২৭	
21	শ্রী: মো: মাহমুদুল হক	ডাক্তার	০১৭৬৫৬২৫৭১৩	
22	শ্রী: মো: মাহমুদুল হক	ইউনিয়ন মাদ্রাস	০১৭২৭৪২৭৭৬	

SL #	Name (নাম)	Occupation (পেশা)	Mobile No: (মোবাইল নম্বর)	Signature (স্বাক্ষর)
23	শ্রী হুমায়ুন কবীর	U.P. মাস	01711-41192	মুহিব
24	ইতি হুমায়ুন কবীর	U.P. মাস	01748976411	শুভ
25	শ্রীমা কবীর	U.P. মাস	02926-9980	শুভ
26	জাহির আলম	Student	01793-69779	শুভ
27	শ্রী হুমায়ুন	Service	01925-883342	শুভ
28	শ্রী: শ্রী: মাস	Driver	01710-501240	মাস
29	শ্রী হুমায়ুন কবীর	ব্যবসা	01744666058	শুভ
30	শ্রী হুমায়ুন			শুভ
31	শ্রী হুমায়ুন	চাকরি		শুভ
32	শ্রী হুমায়ুন	চাকরি	02980097007	শুভ
33	শ্রী হুমায়ুন	চাকরি		শুভ
34	শ্রী হুমায়ুন	ব্যবসা		শুভ
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