

Environment and Social Due Diligence Report as per IFC Sustainability Framework

Projects of Summit's Turbine Division

May 2016

Environment and Social Due-Diligence Report

Prepared for

Summit Corporation Limited

Prepared by

AECOM India Pvt. Ltd.

May 2016

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Quality Information

Review and Report Preparation

The review and report preparation were undertaken by the following AECOM professionals from AECOM's, Gurgaon office, Haryana, India

Bibiyana II, SBIIPCL

Nishtha Gupta, Project Environmental Consultant

Ashulia, Maona, and Ullapara Reports

Nishant Kumar, Environmental Consultant

Nidhi Sharma, Associate

Quality Control Review

A Quality Control Review of this report was conducted by Reela Mishra, in AECOM's Gurgaon Office, Haryana, India office

Signature:

Reela Mishra, Senior Environmental Consultant

Signature:

Amit Goswami, Project Environmental Consultant

Revision History

Revision	Revision Date	Details	Authorized	
			Name/Position	Signature
Revision No. 1	27 May 2016		Ajay Pillai Project Director	

1.0 Introduction

Summit Group of Companies is one of the leading private sector conglomerates of Bangladesh comprising a chain of business units including power, shipping and communications. Summit Group is one of the pioneers in power generation in Bangladesh with eleven power plants in operation. Summit Corporation Limited (hereinafter referred to as 'SCL/ Summit'), formerly known as Summit Industrial and Mercantile Corporation (Pvt.) Ltd., was established in 1985, as a holding company sponsoring its subsidiary companies to own, build and operate infrastructure projects in power sector.

SCL has eight subsidiary companies that are part of the Summit Group. Apart from these, SCL also holds stakes in Summit Power Limited. (hereinafter referred as 'SPL'), an independent entity with other shareholders. SCL currently produces around 1,260 MW of power, which is around 13% of total capacity of Bangladesh. The total net worth of SCL, including all its subsidiaries, is USD 600 million as on FY-15.

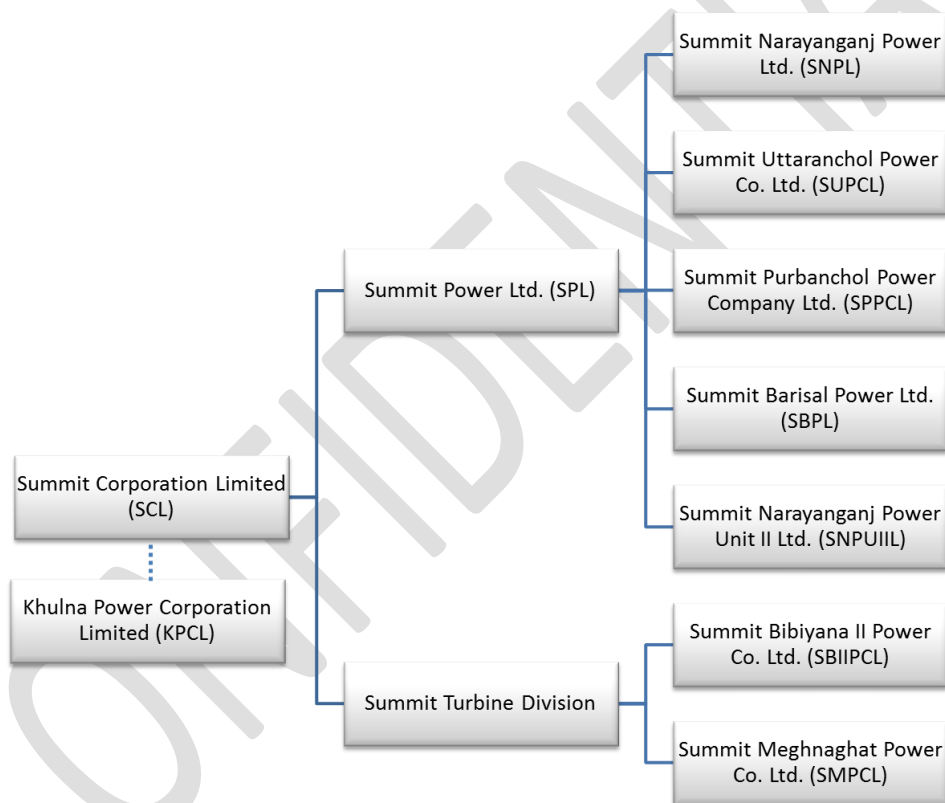


Figure 1-1 – SCL and Subsidiary Companies

SCL operates both gas based and Heavy Fuel Oil (HFO) based power plants through its subsidiary Turbine division and Summit Power Limited (SPL). SCL has a Turbine Division for development and operation of units using turbines for generating electricity. The Turbine Division currently comprises two subsidiary companies, SMPCL and SBIIPCL. The subsidiaries formed under the Turbine Division follow the policies and procedures of the holding company, SCL.

SPL which is a subsidiary of SCL is a holding company and comprises of five subsidiary companies including: (i) Summit Narayanganj Power Ltd. (SNPL), (ii) Summit Purbanchal Power Company Ltd. (SPPCL), (iii) Summit Uttaranchal Power Company Ltd. (SUPCL), (iv) Summit Narayanganj Power Unit II Ltd. (SNPUIIL); and (v) Summit Barisal Power Ltd. (SBPL). SPL also holds 17.64% of the ownership of Khulna Power Company Limited (KPCL)

which has three HFO based power plants: (i) 110 MW (operational since 1998) at Goalpara, Khulna (ii) 115 MW (operational since 2011) at Goalpara, Khulna and (iii) 40 MW (operational since 2011) at Noapara, Jessore.

1.1 Purpose

SCL intends to hold 20% of the country's generation capacity. As power generation is a capital-intensive sector, SCL has planned to go international market for expanding its equity base. As part of this endeavour, SCL has signed an Appraisal letter with the International Finance Corporation (hereinafter referred to as 'IFC') for investment in the company to be made by latter and its co-investors, subject to satisfactory outcome of a due diligence process.

As per the requirements of IFC, due diligence on Environmental & Social aspects of the Company is required before making any decision on investment/financing in any company. SCL and IFC have therefore engaged AECOM India Private Limited (hereinafter referred to as 'AECOM') to review and assess the environmental, H&S and social performance of Holding company (SCL), subsidiaries, operating assets, assets under construction, and proposed assets under SCL against the following reference framework:

- Bangladesh Environmental, Health, Safety and Social regulations related to all aspects that are covered in the IFC Performance Standards, 2012;
- IFC Performance Standards 1 through 8 dated January 2012;
- The World Bank General Environmental, Health and Safety ("EHS") Guidelines, dated 2007;
- World Bank Sector EHS Guidelines for Thermal Power Plants dated 2008;
- Power Sector EHS Guidelines for Electric Power Transmission and Distribution dated 2007 (except Section 3.2 and 3.3);

As part of the due-diligence exercise, AECOM has conducted site visits to operational, and under construction projects, and conducted desk based assessment for proposed projects. Desk based assessments were also conducted for operational assets of the Turbine Division. This report presents details of observations made as part of Environmental and Social Due Diligence (ESDD) of Summit Turbine Projects.

The present assessment has been undertaken as per the predefined scope of work (under **Section 1.2** of this report) and methodology (under **Section 1.3**) in the AECOM proposal for the assessment dated 06th February, 2016. The observations made by AECOM professionals during the assessment are detailed under **Section 3.0** of each report along with recommendations to mitigate or minimize the Environment and Social (E&S) risk or impact(s), if any.

1.2 Scope of Work

The scope of work for the E&S DD of operational assets includes the following tasks:

- Identification and description of the main environmental and social risks and impacts;
- Assess the compliance of the Company's environment, health, safety and social management systems (ESMS) with the provisions of applicable standards presented in **Section 1.1**;
- Assessment of the compliance status of the Project against EHS&S regulatory requirements and requirements of Applicable Standards and identify any non-compliances;
- Characterization of the environmental setting, current surrounding land use, historical land use (on & off-site) of the Project and related issues concerning the environmental context of the Project, which may be of relevance to operation related risks and impacts;

- Evaluation of current and past operational activities and related practices at the Project in order to establish known or potential sources of soil, groundwater and/or surface water impact;
- Review of the management systems, mechanisms, policies and procedures in place for the management of environmental and social issues at both holding company and individual operations, including organization, objectives, targets, training, performance monitoring and auditing, and staffing, budgeting, and management review including covering matters related to use and management of contractors;
- Identification from media and other relevant sources if there are any concerns regarding potential environmental and social issues in relation to the Investment or the Sponsor, including outstanding litigation, notices or orders from courts or regulators, negative Non-Governmental Organization and/or affected community attention, that may lead to reputational risk;
- Discuss with plant personnel and review of documents to assess involvement of stakeholders including affected communities to assess risk, issues, concerns and opportunities; and
- Assessment of the capacity and resources of the Investment to implement the Environmental and Social Management System and the Action Plan;

1.3 Methodology

The approach and methodology broadly applied for the execution of the assessment has been detailed below:

- A list of information required for the project was shared with the company after the kick-off meeting. Review of all existing documents pertaining to project has been undertaken as detailed in Section 2.0 of the report.
- AECOM reviewed the existing Environmental and Social Management System (ESMS) of the project in order to assess its adequacy and effectiveness of implementation, and identify gaps with the reference framework;
- Project specific environment and social risks and impacts were evaluated as per the reference framework, such as:
 - resource consumption (energy and water), emissions and discharges;
 - waste management;
 - increased traffic;
 - impacts on nearby communities;
 - labour working conditions;
 - occupational health and safety;
 - community health, safety and security; and others.
- Review of the adequacy and status of implementation of management and monitoring plans for the project operations, developed as part of the project's ESIA including the effectiveness of existing monitoring system in place, was undertaken;
- Review of other relevant environmental and social risks and impacts or issues that may emerge out of review of public information and/or stakeholder consultations was also undertaken;
- Verification of compliance with various commitments of the project as part of ESIA and clearances obtained from relevant agencies was undertaken; and

- Based on review and verifications, the present report has been prepared which comprises of observations on compliance to and gaps with respect to the reference framework, as detailed under **Section 3.0**; and
- Recommendations of additional actions to close the gaps detailing actions to be implemented, budgets/estimated costs and timeframes for completion of such actions/measures has been provided under **Section 4.0** of this report.

Furthermore, the observations made in the report are subjected to material threshold in relation to expenditures required to meet compliance with the Applicable Standards. This material threshold is a monetary value and relates to costs considered necessary to address findings identified during the assessment. Expenditures greater than the material threshold have been considered to have the potential to impact either the value or the operability of the assets. In the context of this due diligence, the threshold has been defined as an Environmental or Social (including safety, security and community) issue that:

- Would require more than USD 250,000 to rectify;
- May result in significant business interruption/criminal proceedings or a major environmental incident;
- Has resulted in community or NGO protest (as identified through an internet search); and/or
- Could result in a risk of multiple serious injuries or fatalities.

1.4 Limitations and Data Gaps

This report presents the observations made by AECOM professionals based on the scope of work and agreed approach and methodology with Summit and lenders. The present report has been developed to identify the potential EHS and social issues and conditions associated with the activities of the project for which the assessment has been carried out. During the course of this assessment, AECOM has attempted to independently assess the potential presence of EHS and social issues or conditions within the limits of the established scope of work as described in the contract between IFC, Summit and AECOM.

As with any assessment exercise, there is a certain degree of dependence upon verbal information provided by the point of contact for assessment, limited number of documents available for review and information available in the public domain, which is not readily verifiable. CAP developed for the facility constitutes a summary of the recommended actions, whereas a full description is presented in the body of this report on the nature of the findings, distinguishing between:

- Those aspects that could not be verified based on the available information; and
- Those areas in which a non-compliance with IFC Performance International Standards or Bangladesh National Regulations was observed.

This report has been prepared by AECOM for the benefit of its client, Summit and IFC. AECOM's client may release the information to third parties, who may use and rely upon the information at their discretion. However, any use of or reliance upon the information by any party shall be solely at the risk of such party and without legal recourse against AECOM, its parent, its subsidiaries and affiliates; or their respective employees, officers, or directors; regardless of whether the action in which recovery of damages is sought is based upon contract, tort (including the sole, concurrent, or other negligence and strict liability of AECOM), statute, or otherwise. This information shall not be used or relied upon by a party that does not agree to be bound by the above statement.

The EHSS Due Diligence of the Summit Turbine Projects is largely based on the documents made available, and discussions with stake holder and observations from site walk through undertaken by AECOM professionals.

Wherever documentation, policies and procedures for evaluation were not available for review, it has been highlighted in the report at relevant sections. In addition, wherever AECOM has not been able to make a judgment or assess any process, it has been highlighted as an information gap and a way forward has been suggested.

1.5 Layout of the Report

This report includes the following sections under each site specific reports:

- **Section 2:** provides a description of each Turbine Project, its operation and procedures and a review of compliance status to the reference frame work;
- **Section 3:** reviews the status of compliance of the each facility with respect to the IFC Performance Standards and applicable reference framework. A consolidated table at the end of Section 3 on summary of findings is also provided for each report; and
- **Section 4:** provides a consolidated Corrective Action Plan (CAP) based on the gaps for all facilities along with timeline for completion.

Site specific reports have been presented in the following sequence:

1. Bibiyana II, SBIIPCL
2. Meghnaghat, SMPCL

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**Environment and Social Due Diligence
Report as per IFC Sustainability
Framework**

**Bibiyana II Power Plant
Habiganj, Dhaka, Bangladesh**

MAY 2016

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List of Acronyms

ADB	Asian Development Bank
BPDB	Bangladesh Power Development Board
CAP	Corrective Action Plan
CCGT	Combined Cycle Gas Turbine
COD	Commercial Operations Date
EHS	Environment, Health and Safety
EHS&S	Environment, Health, Safety & Social
ESAP	Environment and Social Action Plan
ESIA	Environment and Social Impact Assessment
ESDD	Environmental and Social Due Diligence
GoB	Government of Bangladesh
HRSG	Heat Recovery Steam Generator
IDB	Islamic Development Bank
IFC	International Finance Corporation
JGTDSL	Jalalabad Gas Transmission and Distribution System Limited
MSDS	Material Safety Data Sheet
MMSCF	Millions of Standard Cubic Feet
NEPC	China NorthEast Electric Power Engineering & Services Co. Ltd.
OHSAS	Occupational Health and Safety Management System
O&M	Operations & Maintenance
PPA	Power Purchase Agreement
PPE	Personnel Protection Equipment
RAP	Resettlement Action Plan
SCL	Summit Corporation Limited
SBIIPCL	Summit Bibiyana II Power Company Limited
SIMPCL	Summit Industrial and Mercantile Corporation (Pvt.) Ltd
SIA	Social Impact Assessment
WHO	World Health Organization

Executive Summary

Summit Corporation Limited (hereinafter referred to as 'SCL') established in 1985, is a holding company sponsoring its subsidiary companies to own, build and operate infrastructure projects in Power sector. The Group currently produces around 1,260 MW (including two under commissioning plant), which is around 13% of total capacity of the country. Summit intends to hold 20% of the country's generation capacity and has signed an appraisal letter with International Finance Corporation (IFC) for investment to be made by latter. As per IFC requirements, an Environmental and Social Due diligence (ESDD) is required to be undertaken for the holding company and individual assets of Summit. SCL and IFC have thereby engaged AECOM India Private Limited to conduct the desk based ESDD for 341 MW Gas Based Combined Cycle Power Plant at Sylhet, under Summit Bibiyana II Power Company Limited (SBIIPCL). SBIIPCL, one of the group companies under Turbine Division of SCL, was incorporated in 2011 as a joint venture of SCL (80%) and GE Energy LLC, a wholly owned subsidiary of General Electric Company (20%).

The power plant is located at Parkul village in Aushkandi Union under Nabiganj Upazilla of Habiganj district, about 180 km North East of Dhaka in Bangladesh. The commercial operation date (COD) for the Power Plant was 26th December 2015. The plant comprises of one Gas Turbine (1x222 MW), one Heat Recovery Steam Generator (HRSG) and one Steam Turbine (1x119 MW) in a combined cycle configuration. The project has a gas supply agreement with Jalalabad Gas Transmission and Distribution System Limited (JGTDSL) for supply of natural gas from the existing Bibiyana Gas Field. An existing 230 kV transmission line of Power Grid Corporation of Bangladesh (PGCB) is used for power evacuation from the plant. The project O&M contract has been awarded to First Northeast Electric Power Engineering Corporation (NEPC). SBIIPCL has received funding of \$210 million from International Finance Corporation (IFC), Asian Development Bank (ADB) and Islamic Development Bank (IDB). The Environmental and Social Impact Assessment (ESIA) study for the project was conducted in October, 2014.

The ESDD has been undertaken with respect to Bangladesh Environmental, Health, Safety and Social regulations, IFC Performance Standards, 2012, The IFC General Environmental, Health and Safety ("EHS") Guidelines, dated 2007, IFC Sector EHS Guidelines for Thermal Power Plants dated 2008 and Power Sector EHS Guidelines for Electric Power Transmission and Distribution dated 2007.

Key observations and findings as part of the Environmental and Social Due Diligence conducted for the Project are presented below. Detailed observation and recommendations in the form of a Corrective Action Plan has been presented in subsequent sections of this report.

PS 1 – Assessment and Management of Environmental and Social Risks and Impacts

SBIIPCL, in coordination with NEPC, has established and implemented an Environmental, Health, Safety and Social Management System consisting of procedures for managing significant environmental, health, safety and social risks associated with plant operations. A Hazard Identification and Risk Estimation Control Procedure has been prepared by NEPC, for identification and control of potential hazards associated with the work activities and is maintained in the form of Risk Register. An Emergency Response Plan covering emergency arising due to hazards within the plant premises and natural hazards, has also been prepared. The Plan identifies a Response Management Team with delegated roles and responsibilities.

As per requirements of the EHS&S procedures, NEPC maintains monitoring records for temperature change after thermal discharge, Continuous Emission Monitoring System (CEMS) records, effluent quality, ambient air quality, terrestrial and aquatic ecology surveys, surface water quality, ambient noise and noise levels inside the plant premises. Records related to training to Resettlers and agricultural labour; and compensation paid to the PAH,

status of implementation of Livelihood Restoration Plan and Stakeholder Engagement Plan and monitoring reports of resettlement, are being maintained by the site management. Records on H&S training, identified risk and hazards, MSDS, safety inspection monitoring, and incidents/ accidents reported at site are also maintained.

Quarterly environmental monitoring is carried out through third party laboratory and records are maintained for the same. Independent Environment, Health, Safety and Social compliance audits of the plant are conducted on quarterly basis through external agency from October 2014 onwards, and Corrective Action Plans (CAP) proposed during those audits are implemented at site and records are maintained.

SBIIPCL has formulated a Joint Committee for Community Relations (JCCR), which is responsible for community engagement and receiving grievances from affected communities. SBIIPCL maintains records of closure of identified issues during Stakeholder consultations and grievances received.

Based on the assessment, it is inferred that the project complies with the requirements of PS-1.

PS 2 – Labour and Working Conditions

SBIIPCL adopts SCL's HR Policy and procedures for hiring at Site. It also possesses Policies on Non-employment of adolescent and child at workplace; Anti-Discrimination Policy; Anti-Harassment and Abuse at Workplace; which are applicable to all Summit Group Subsidiary Companies. The HR Policy and procedures of NEPC reveals that the compensation and leave benefits for the labour have been framed in consistency with Labour Laws of Bangladesh.

SBIIPCL is compliant to aspects such as Non-discrimination and Equal Opportunity; Grievance Mechanism; Occupational Health and Safety and Workers Engaged by Third Parties. However, the following non-compliances against IFC PS-2 observed during the assessment process are as follows:

- **Human Resource Policy and Procedures:** The HR Procedure of SCL does not have provisions for overtime compensation at the rate of two times the basic salary, limiting overtime upto 60 hours/week and informing workers beforehand.
- **Worker's Organization:** There are no labour unions at present on site however, there are no procedures to handle issues of worker unions in future
- **Retrenchment:** The HR policies of SBIIPCL and NEPC lack the provisions for collective dismissals.
- **Forced Labour:** The element for Forced and trafficked Labour is not covered in the HR Procedure

PS 3 – Resource Efficiency and Pollution Prevention

SBIIPCL has Combined Cycle operations which leads to generation of 355.56 MW power generation at a heat rate of less than 7420 KJ/KWh which is much more energy efficient as compared to the committed heat rate and power output given in PPA agreement and EPC Contract. Further, SBIIPCL is taking measures to reduce emissions by installing stack of 70 m height and use of Low NOx burners (<25 ppm). The treated water from STP, Cooling Tower and HRSG blowdown is sent to the Central Monitoring Basin (CMB) (600 m³ capacity) where it mixes with treated effluent from ETP and from where the combined treated stream is discharged to the river through a pipeline. The storm water channel is also connected to the same pipeline which has outfall in the river. SBIIPCL conducts quality testing of treated combined wastewater on quarterly basis by an external laboratory.

SBIIPCL is partly compliant to the provisions mentioned in PS-3. The non-compliances against IFC PS-3 observed during the assessment process are as follows:

- **Hazardous Material Management:** Reportedly, there are no display of warning signages in the acid and alkali storage area and arrangements for spill kits. There are no arrangements for secondary containment

for capturing any spillage from the hazardous waste storage area. There are a number of openings provided in this area, and any spillage from this area can directly enter storm water drainage and eventually into Kushiya river.

PS 4 – Community Health Safety and Security

SBIIPCL is operating plant in accordance with GIIP (good international industry practice), taking into consideration safety risks to third parties or Affected Communities. The plant area including construction/ laydown area to the north of the SBIIPCL is situated at an elevation of 11.2 m above msl (i.e. approximately 1.05 m above the highest recorded flood level). There is a provision for storm and possible flood water drainage system to the south and east of the power plant approximately 1km from the Plant to ensure that incidence of flooding or water logging is being avoided especially in the resettlement area and immediate low-lying areas.

The plant is compliant w.r.t. Infrastructure Equipment Design and Safety, Hazardous Materials Management and Safety; and Emergency Preparedness and Response covered under PS-4 however, following gap was observed during the assessment process:

- **Community Health and Safety:** The records on inventory of vehicles in operation, PUC and certificate of fitness were not available.

PS 5 – Land Acquisition and Involuntary Resettlement

The alternative site assessment for the plant has not been examined as BPDB had already identified the site and initiated the process of land acquisition at the Project Site for SBIIPCL. The location of site was finalized after consideration of proximity to Gas field and source of water supply. However, due consideration was given to identify shortest route between Gas field and project site thereby avoiding residential settlements wherever possible and also minimizing impacts on environment.

BPDB had acquired private agricultural land and subsequently leased it to SBIIPCL for a period of 22 years commencing from commercial operation date of the Project. The land acquisition involved 376 Project Affected Households, 2598 Project Affected Persons, 138 agricultural labour. Resettlement Action Plan and Livelihood Restoration Framework has been prepared for the project and is under implementation by SBIIPCL. The compensation have been paid to all the project affected families. The project is thus observed to be compliant to aspects under PS-5.

PS 6 – Biodiversity Conservation and Sustainable Management of Living Resources

There is one endangered bird species as per IUCN Red List of Threatened Species at around 20 km from the plant and four (4) near threatened fishes in Kushiya River. A two (2) day bird survey has been undertaken by SBIIPCL in December, 2015 by engaging a third party. The findings of the study revealed that there is no intervention of the power plant and T-line (70 m) on the migratory birds in the project area.

SBIIPCL has also undertaken an Aquatic Ecological Monitoring Survey in November 2015 and it was observed from the study findings that Kushiya River possesses good water quality and rich biodiversity like the baseline study and SBIIPCL project has not yet posed any considerable impact on the water quality, aquatic biodiversity and fisheries conditions. The plant is overall compliant to aspects under PS-5. However, the following non-compliance against IFC PS-6 was observed during the assessment process:

- The Green Belt Development Plan lacks the details of width of the Greenbelt and consideration of Pollution attenuation in the Greenbelt designing.

PS 7– Indigenous People

The project area does not report presence of Indigenous ethnic minorities, therefore, PS-7 is not applicable to this project. Further, there are no indigenous people or ethnic minorities living or owning/renting or leasing property on any of the land acquired for the plant.

PS 8 – Cultural Heritage

The neighbouring area adjacent to the project site does not involve any archaeological monument or structures of cultural significance. Also, no cultural sites have reportedly been affected due to the process of land acquisition or any project construction activities therefore, PS-8 is not applicable to the project.

Project Categorization

The plant involves significant environmental and social risks and impacts which are associated with various applicable Performance Standards under IFC Framework. As per IFC categorization, the project can be categorized as **Category A**, based on the following observations:

- Impacts on surface water quality of Kushiyara River due to thermal discharges and ambient air quality due to emissions leading to increase in SO₂, NO_x, CO, PM_{2.5} and PM₁₀ concentrations
- Impact on ecology due to presence of one (1) endangered bird species as per IUCN Red List of Threatened Species and four (4) near threatened fishes in Kushiyara River
- Impacts on ambient noise levels due to high noise generation from project operations
- Land acquisition for the project involving Resettlement and Rehabilitation of 376 Project Affected Households (PAH), comprising of 2598 Project Affected Persons (PAP)
- Cumulative impacts from the operation of two more CCGT power plants adjoining the Project.

2.0 Project Description

2.1 Background

SBIIPCL operates a 341 MW Combined Cycle Gas-Turbine (CCGT) power plant at Parkul village in Aushkandi Union under Nabiganj Upazilla of Habiganj district, about 180 km North East of Dhaka in Bangladesh. It comprises of one Gas Turbine (1x222 MW), one Heat Recovery Steam Generator (HRSG) and one Steam Turbine (1x119 MW) in a combined cycle configuration. The project has a gas supply agreement with Jalalabad Gas Transmission and Distribution System Limited (JGTDSL) for supply of natural gas from the existing Bibiyana Gas Field. An existing 230 kV transmission line of Power Grid Corporation of Bangladesh (PGCB) is used for power evacuation from the plant. The project O&M contract has been awarded to First Northeast Electric Power Engineering Corporation (NEPC).

The Summit Bibiyana Power Company Limited 1 & 2 (SBPCL 1 & 2) originally proposed to set up two Combined Cycle Turbine power plants at Bibiyana as per decision of the Government of Bangladesh (GoB) towards awarding the task in favour of the proponent. SBIIPCL envisaged constructing and operating one combined cycle gas-turbine power plant (SBIIPCL Power Plant) at Bibiyana, which is now operational. The commercial operation date (COD) for this project was 26th December 2015.

The project has received funding of \$210 million from multidonor agencies which includes International Finance Corporation (IFC), Asian Development Bank (ADB) and Islamic Development Bank (IDB).

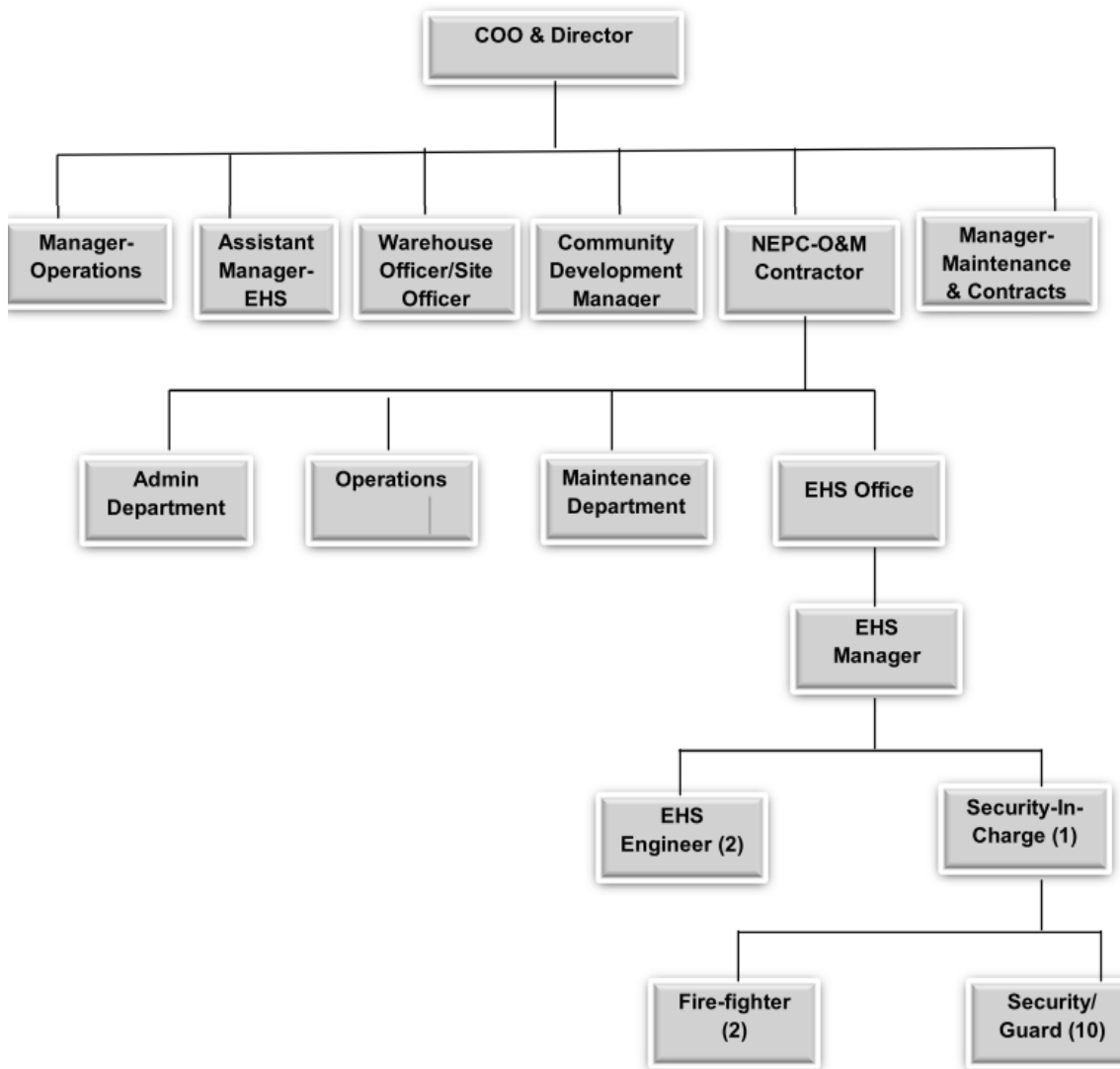
2.2 Organisation Structure

SBIIPCL has definitive organization structure for the operation and maintenance phase of the plant, headed by the Chief Operating Officer (COO) of SBIIPCL, who reports directly to the Managing Director of SCL at corporate level. The Manager (Operations), Manager (Maintenance and Contracts) and Head O&M Contractor (i.e. NEPC) report to the COO on the operational and maintenance issues of the plant. SBIIPCL has also appointed an Assistant Manager (EHS) and Community Development Manager who are responsible for management of EHS&S issues at site level along with coordination with the O&M team of NEPC.

The organizational structure of NEPC (dated 30th January 2016) indicates that the General Manager leads the various departments operating at site level that include Administration, Operations, Maintenance and EHS, each headed by respective Managers. The EHS department particularly comprises one (1) EHS Manager, two (2) EHS Engineers and one (1) Security In-charge, along with two (2) fire fighters and ten (10) security personnel.

The organization structure for the project is given in **Figure 2.1** below:

Figure 2-1: Organization Structure



2.3 Facility Details

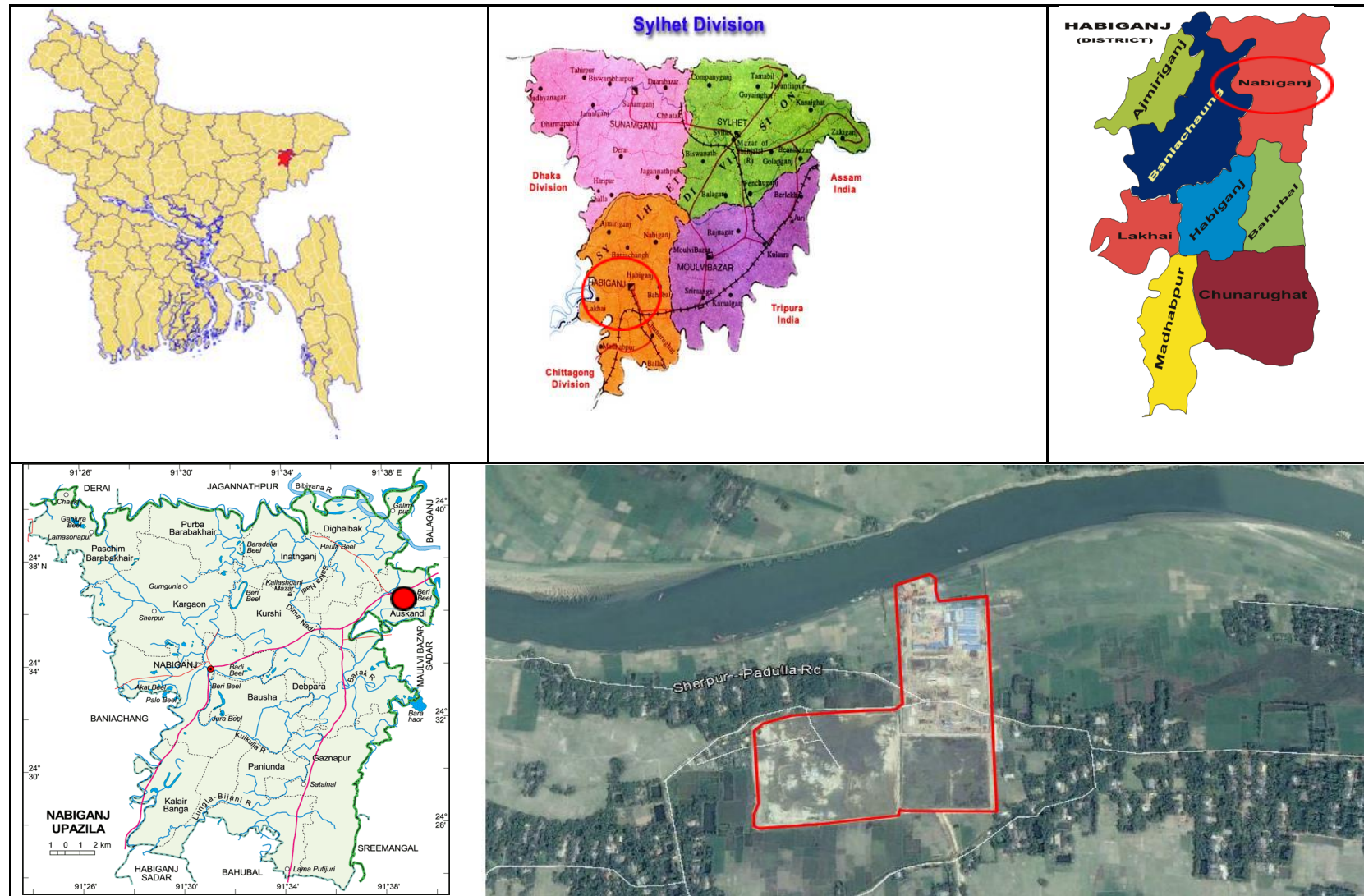
The power plant is located at Parkul village in Aushkandi Union under Nabiganj Upazilla of Habiganj district, approximately 3 km west of Sherpur Bridge, approximately 45 km south-west of Sylhet (the district headquarters) and at a distance of around 180 km north-east of Dhaka. The plant is built on the southern bank of Kushiyara River, at a distance of less than 1 km from the river to ensure availability of fresh water. The indicative location map of the Bibiyana II Power Plant is presented in **Figure 2.2**

Bangladesh Power Development Board (BPDB) has, under and through an agreement with the Government of Bangladesh (GoB) obtained land comprising approximately 67.58 acres acquired fully in 2012, of which only 11 acres has been leased to SBIIPCL for a period of 22 years commencing from COD i.e. 26th December, 2015.

The land for the plant and its associated facilities is mostly private land. The plant associated facilities such as switchyard, approach road, gas pipeline, and transmission line are being shared with the Bibiyana South and Bibiyana III projects, proposed to be built in future adjoining the existing plant premises.

The land for construction of lay down area is 14 acres and the access road has been acquired by BPDB and has subsequently been leased to SBIIPCL for a period of 22 years commencing from COD. The private land for the gas pipeline has been acquired by Jalalabad Gas Transmission & Distribution System Limited (JGTDSL) and for the switchyard and T-line by PGCB.

Figure 2-2: Location Map of SBIIPCL



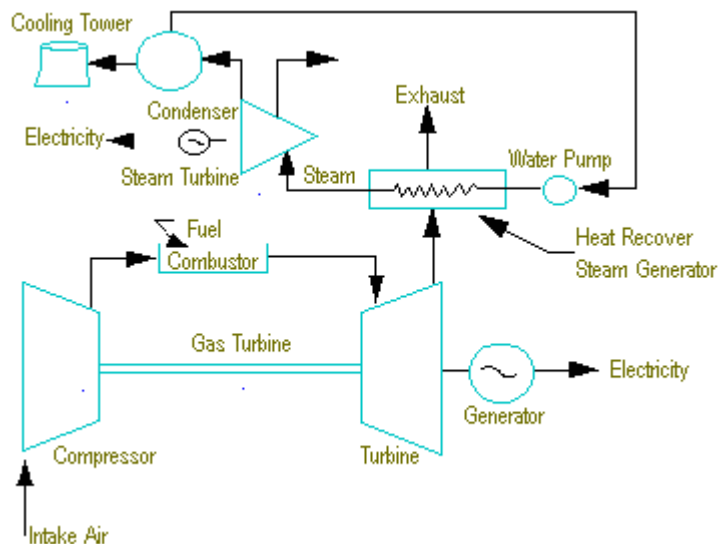
2.3.1 Process Description

The project involves power generation through Combined Cycle Gas Turbines (CCGT) which comprises of employing a Triple stage heat recovery steam generator (HRSG) that captures heat from high temperature exhaust gases at Low pressure, Intermediate pressure and High pressure to produce steam, which is then supplied to a steam turbine to generate additional electric power. It increases the overall efficiency of electric power plants thereby recovering and utilizing the residual heat energy in hot exhaust gases to achieve electrical efficiencies up to 60 percent.

The HRSG comprising of a series of heat exchangers is used to create steam for the steam turbine by passing the hot exhaust gas flow from a gas turbine or combustion engine through banks of heat exchanger tubes. The heat is absorbed as the hot exhaust gases flow past the heat exchanger tubes in which hot water circulates, thereby formation of superheated steam in the tubes.

The superheated steam produced by the HRSG is supply to the steam turbine at triple stages-Low pressure, Intermediate pressure and High pressure where it expands through the turbine blades, imparting rotation to the turbine shaft. The energy delivered to the generator drive shaft is converted into electricity. The steam after exiting from steam turbine is sent to a condenser which routes the condensed water back to the HRSG. The process flow diagram is given in **Figure 2-3**.

Figure 2-3: Process Flow Diagram



2.3.2 Details of Turbine and Specifications

The gas turbine has a capacity of about 222 MW while the capacity of the steam turbine is 119 MW, giving a net electrical capacity of 341 MW. The PG 935 IFA gas turbine with hydrogen cooled generators is installed, with Dry Low NOx (DLN) combustors with 18 stage axial compressors, 3 stage axial turbines and a common rotor.

SBIIPCL has provisions of housing gas turbine and the steam turbine within a turbine building; HRSG with a 70 m high stack and a by-pass stack of at least 45 m height for simple cycle operations with an exit gas velocity of 15 m/s. As per fuel consumption data provided, the quantity of gas consumption was 7073.09 MMSCF from June-December,

2015 during Simple Cycle Operations and 2875.9 MMSCF from 1st January, 2016 till 15th March, 2016 during Combined Cycle power operations.

2.3.3 Utilities

The plant comprises of following utilities:

- Emergency diesel generating set,
- Water treatment plant (comprising of a river water pumping system at a distance of 340 m from river bank, water treatment and demineralization plant),
- Effluent treatment plant (neutralization),
- Sewage treatment plant,
- Water storage tanks including for fire-fighting system,
- 4000 liter liquid fuel storage tanks
- Hazardous materials storage facilities
- Chemical laboratory

Apart from the above utilities, the power plant comprises of condensing equipment, feed water system, chemical dosing system, compressed air system, air conditioning system and ventilation system and closed cooling system with cooling towers. There are provisions of discharging boiler and cooling tower blowdown after it is cooled to within 3^oC of ambient water temperature, into a basin prior to discharge into the Kushiyara River.

2.3.4 Associated Facilities

Access Roads: The land for the project associated facilities comprises of a 2 km long access road for providing connectivity of the project site to the Dhaka-Sylhet (N2) highway which has been acquired by BPDB.

Gas Pipeline: The 8.5 km gas pipeline from the plant to the Bibiyana Gas Field at the Karimpur distribution point has been developed by JGTDSL on about 46 acres of land, out of which, 29.73 acres of land comes under Right of Way (RoW)

Switchyard: The switchyard has been constructed in around 26 acres of land required for the installation of the electricity sub-station built by PGCB.

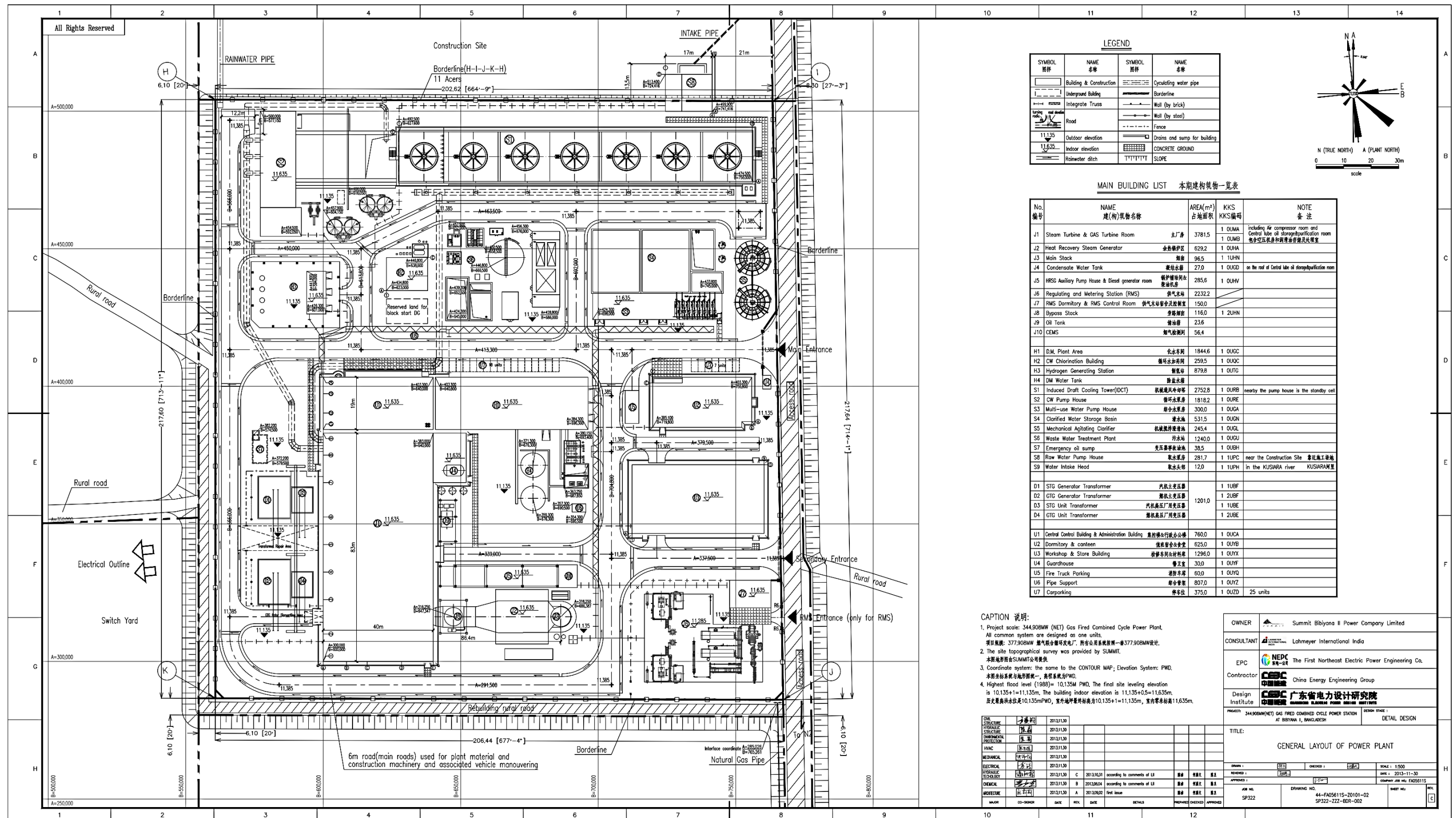
Transmission line: A 70 m transmission line from the switchyard to the nearest T-Line tower of the national grid being built by PGCB.

The details of the associated facilities for the project have been presented in **Table 2-1** below and the layout of the plant indicating the various components is given in **Figure 2.3**.

Table 2-1: Project Associated Facilities

S. No.	Facility	Area (acres)
1	Switchyard	26.0
2	Site Access Road (2 km)	4.2
3	Gas Pipeline	46

Figure 2-3: Layout of SBIIPCL and its associated facilities



2.3.5 Status of Permits

The list of permits and their status is listed in **Table 2-2**. All the permits were observed to be valid and in compliance with the requirements.

Table 2-2: List of Permits

S. No.	Type of Permit	Issue Date	Validity	Issuing Authority
1.	Factory License	30 th June, 2016	30 th June, 2017	Dy. Chief Inspector of Factories, Bangladesh
2.	Environmental Clearance	17 th June, 2015	16 th June, 2016	Department of Environment, Bangladesh
3.	License for Auxiliary Boiler Registration	27 th August, 2015	26 th July, 2016	Dy. Chief Inspector of Factories, Bangladesh
4.	Provisional License for generation of 349 MW(Gross) [GT228 MW & ST: 121 MW] electricity	29 th June, 2015	28 th June, 2016	Bangladesh Electricity Regulatory Commission
5.	Boiler Registration-HP Drum	14 th June, 2015	13 th June, 2016	Dy. Chief Inspector of Factories, Bangladesh
6.	Boiler Registration-IP Drum	14 th June, 2015	13 th June, 2016	Dy. Chief Inspector of Factories, Bangladesh
7.	Boiler Registration-LP Drum	14 th June, 2015	13 th June, 2016	Dy. Chief Inspector of Factories, Bangladesh
8.	Fire License	8 th June, 2015	30 th June, 2016	Fire Service and Civil Defense
9.	License for use of river water/ foreshore/jetty	7 th October, 2015	28 th August 2016	Bangladesh Inland Water Transport Authority (BIWTA)

2.4 Environment Health, Safety and Social Scenario

2.4.1 Environment

The environmental issues are addressed through EHS department at site level. SBIIPCL maintains Environmental Monitoring records during Operation Phase in accordance with the Bangladesh DOE, IFC and World Bank Standards. SBIIPCL maintains records for Continuous Emission Monitoring System (CEMS), effluent generation, medical, hazardous waste such as Used Oil, Air and Oil filters, Fuel soaked cloth and non-hazardous waste generation such as Paper, Plastic, Intake and Kitchen waste. The Environmental policies, procedures and manuals for SBIIPCL and O&M Contractor were provided for review which integrates an element of Audit, Inspection and evaluation, feedback and review procedures.

2.4.2 Health and Safety

Based on the observations gathered during the assessment and review of documents pertaining to health and safety, it can be inferred that SBIIPCL has a robust health and safety management system and related procedures. The mock drill inspections and records, Work Permits, HIRA procedures and procedures for handling Hazardous Chemicals, Spill Prevention and Response Plan, Emergency Response Procedure, Incident Investigation and

Reporting procedure are in place. Records for Job Hazard Analysis training, safety training, safety inspections and mock drills are being maintained.

2.4.3 Social and Stakeholder

SBIIPCL has formulated a Social Policy and is committed for undertaking social initiatives in accordance with the CSR policy of Summit Group. The elements of the policy are framed in line with the ADB Safeguard Requirements, ISO 26000 for Social Responsibility, standards of World Bank, IFC's Performance Standards and Equator Principles. The Grievance Redressal Mechanism procedures for addressing grievances of community were found to be in place. SBIIPCL has procedures and records for implementation of Stakeholder Engagement Plan, Community Development Plan, Public Relation Plan and Livelihood Restoration Framework.

2.5 Project Categorization

The plant involves significant environmental and social risks and impacts which are associated with various applicable Performance Standards under IFC Framework. As per IFC categorization, the project can be categorized as **Category A**, based on the following observations:

- Impacts on surface water quality of Kushiyara River due to thermal discharges and ambient air quality due to emissions leading to increase in SO₂, NO_x, CO, PM_{2.5} and PM₁₀ concentrations
- Impact on ecology due to presence of one (1) endangered bird species as per IUCN Red List of Threatened Species and four (4) near threatened fishes in Kushiyara River
- Impacts on ambient noise levels due to high noise generation from project operations
- Land acquisition for the project involving Resettlement and Rehabilitation of 376 Project Affected Households (PAH), comprising of 2598 Project Affected Persons (PAP)
- Cumulative impacts from the operation of two more CCGT power plants adjoining the Project.

2.6 Project Documents Reviewed

For the purpose of assessment of the project, SBIIPCL has provided following project related information, which was requested through 'Documentation Request List' by AECOM.

1. Environmental and Social Impact Assessment (ESIA) Report prepared by Bangladesh Center for Environment Studies and ENVIRON UK (October, 2014)
2. Environmental and Social Action Plan (January, 2015)
3. Social Compliance Audit Report prepared by ENVIRON UK(October, 2014)
4. Social Monitoring Report prepared by BARC (4th April, 2015)
5. First EHS&S Compliance Audit during Construction Phase of Bibiyana II Power Project, Habiganj, Bangladesh (16th October, 2014)
6. ERM's Second Quarterly Environmental and Social Compliance Monitoring Report (May, 2015)
7. ERM's Third Quarterly Environmental and Social Compliance Monitoring Report (November, 2015)
8. EHS&S Policy of SBIIPCL (in English and Bangla)
9. EHS&S Policy of NEPC
10. Labour Audit Report conducted by BCAS (25th June, 2015)
11. EHS procedures of NEPC
12. Environmental Monitoring records
13. Confined Space Inventory

14. HR and Social Policy and Procedures
15. Environment & Health, and Safety Policies
16. Supplier Management Procedure
17. NEPC's EHS and HR Procedures
18. Work Permit records
19. EHS Training records
20. Work Permits
21. Medical Certificate of Workers
22. Licence approvals for Environmental Clearance, Boiler Registration, Factory Licence, Fire Licence and Licence for Diesel Storage
23. Mock Drill records for Fire Emergency
24. MSDS Inventory of chemicals and hazardous substances
25. Greenbelt Development Plan
26. Layout Plan
27. ETP Design
28. Stakeholder Engagement Plan; First Quarterly Resettlement Monitoring Report (2015); Community Development Plan (December, 2014); Livelihood Restoration Plan (27th May, 2015) and Public Relation Plan
29. Labour Audit Report conducted by Bangladesh Center for Advanced Studies (BCAS) dated 25th June, 2015
30. Quarterly Progress Report on Livelihood Restoration Program (November 2015-January, 2016) prepared by Institute of Development Affairs dated 2nd February, 2016 PPE Inventory, Management procedures, and compliance checklist
31. Safety Inspection records
32. Grievance Redressal Mechanism procedures and records
33. Wages records
34. Records for Stakeholder consultations, Livelihood Restoration Plan Status of Seed Money distribution, List of Resettlers and Resettlement Site Focus Group discussions
35. Worker Camp Inspection Records and documents on Accommodation Arrangements
36. NEPC's EHS Training Modules for workers
37. Accident Investigation Register
38. Power Purchase Agreement, Ambulance Agreement and Land Lease Agreement
39. Details of Fire Fighting team, firefighting truck inspections, chemical inventory, First Aid team and trained personnel
40. Organogram, Training calendar and Waste Generation and Disposal record
41. Report on Monitoring Fishery Conditions within Impact Zone of SBIIPCL Project dated 10th February, 2016
42. Report on Monitoring of Migratory Birds within Bibiyana II Gas Power Project Area (December, 2015)
43. Monitoring Report on Terrestrial and Aquatic Organisms for the Impact Zone of SBIIPCL Project dated 30th August, 2015

3.0 Document Review and Assessment of Compliance

This section details the compliance of the project with respect to requirements under IFC Sustainability Framework and applicable national and local regulations. The observations made during the due diligence and gaps identified are discussed in the below sections:

3.1 Performance Standard (PS) 1: Assessment and Management of Social & Environmental Risks and Impacts

Applicability to the Project

The proposed project poses potential environmental and social impacts during construction and operation phase. It will affect ambient environment (air, soil and water) and neighboring communities due to an increase in traffic, influx of labor and emissions; and impacts from associated facilities (T-Line, switchyard, access road and gas supply line). The project involves land acquisition leading to resettlement and rehabilitation (R&R) issues and will affect economic status and livelihood of the communities adjacent to the project site. Therefore, there is need for assessment of environmental and social risks envisaged from the project, and henceforth, PS1 is applicable.

3.1.1 Environment and Social Management System

Requirement -1: *The client, will conduct environmental and social assessment of the project, and establish and maintain an ESMS appropriate to the nature and scale of the project and take measures for mitigation of the identified environmental and social risks and impacts. The ESMS will incorporate the following elements: (i) policy; (ii) identification of risks and impacts; (iii) management programs; iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review.*

Observation 1: SBIIPCL in coordination with NEPC, the O&M Contractor has established an Environmental, Health, Safety and Social Management System consisting of procedures for managing significant environmental, health, safety and social risks associated with project operations. The management plan involves identification of the means, time frame and responsibilities at each relevant function and level of the organization.

The SBIIPCL's Plant Manager and DGM (Operation and HSE) has to establish and maintain integrated environment and social management programs for the significant environmental and social risk and impacts identified by cross functional committee i.e. EHS/HSE(Health, and environment committee) and Grievance Redressal Committee-Plant. The grievances and issues raised by the labor, contractor, subcontractor personnel and community which cannot be solved at the plant site level can be escalated to GRC-Corporate committee for resolution.

SBIIPCL has conducted an ESIA Study for the project in 2014 and prepared an Environmental and Social Management System and Monitoring Plan (ESMMP) for construction and operation phases of the project, that is under implementation. The ESMMP framed for ensuring employee, contractor and community health and safety includes framework inspections, monitoring and training. Further, a Stakeholder Engagement Plan, Socio-Economic Impact Assessment, Resettlement Action Plan (RAP) and Livelihood Restoration Plan has been framed which is under implementation and records for meetings and consultations are being maintained and were available for review. These procedures integrate key elements of response time and responsibilities of key personnel, monitoring and evaluation of records.

NEPC has documented procedures for management of various EHS&S issues along with responsibilities, monitoring plan, review and audit mechanism as given below:

- Stakeholder Engagement Plan
- Grievance Redressal Mechanism
- Community Development Plan
- Livelihood Restoration Plan
- Public Relation Plan
- Hazardous Chemical Handling Procedure
- Spill Prevention & Response Plan
- Emergency Response Procedure
- Waste Management Procedure and Hazardous Chemicals Handling Procedure
- Incident Investigation and Handling Procedure

3.1.2 Policy

Requirement -2: *The client will establish an overarching Environmental and Social policy defining the environmental and social objectives to achieve sound environmental and social performance. It should include a framework for the environmental and social assessment and management process, and should be in consistent with the applicable laws and legislations at State and National level and the principles of the Performance Standards.*

Observation 2: The Environment, Health, Safety, and Social Policies of NEPC signed by EHS In-Charge dated 10th June, 2015 were available which entails the elements of audit, management and review.

The EHS Policy at Plant level in English and local language (Bangla) was available for review. As per data review, it was observed that SBIIPCL has a Social Policy in place which is signed by Chief Executive Officer, dated 15th January, 2015 includes the reference framework of ADB Safeguard Policy Statement (2009), guiding principles of World Bank and IFC Performance Standards and Equator Principles. It includes essential elements of Stakeholder Engagement, Grievance Redressal Mechanism, Livelihood Restoration, Community Consultation and Participation, monitoring and review. Further, the EHS&S policies of SBIIPCL have reportedly been displayed in the main gate and office areas.

3.1.3 Identification of Risks and Impacts

Requirement -3: *The client will establish and maintain a process for identifying the environmental and social risks and impacts of the project. The scope of the risks and impacts identification process will be consistent with good international industry practice, and will determine the appropriate and relevant methods and assessment tools. The process may comprise a full-scale environmental and social impact assessment, a limited or focused environmental and social assessment, or straightforward application of environmental siting, pollution standards, design criteria, or construction standards. The risks and impacts identification process will consider the emissions of greenhouse gases, the relevant risks associated with a changing climate and the adaptation opportunities, and potential transboundary effects, such as pollution of air, or use or pollution of international waterways.*

Observation 3: The Environmental and Social Impact Assessment (ESIA) study for the project was observed to be conforming to Terms of Reference issued by DOE Bangladesh; IFC Performance Standards, 2012; ADB's Social Performance Standards, 2009 and World Bank Guidelines for Thermal Power Plants, 2008. It encompasses the environmental and social risks envisaged for the project during construction, operation and decommissioning phases and the mitigation measures proposed to ameliorate such impacts.

The review of ESMMP in ESIA Report and secondary data available through media and reliable sources reveals that the risks on EHS&S aspects of significant concern such as Ambient Air Quality, Noise levels, Ecology, and Socio-economic profile in the area have been covered in the Report. The risks identified were due to upstream dredging,

sedimentation and channel degradation, thermal discharge, which may have adverse impacts on fish habitat in the downstream of Kushiara River and loss of aquatic habitats. The Report also covers aspects related to bank erosion, sand mining and quantitative risk assessment study, GHG monitoring, fisheries survey, and climate change adaptation study.

A Hazard Identification and Risk Estimation Control Procedure prepared by NEPC, for identification and control of potential hazards associated with the work activities which is being maintained in Risk Register. It includes risk estimation for working at Heights, Heavy Lifts, Working in Confined Spaces, Operation near Live Line, Handling Hazardous Chemicals, Man lift Operations, and Heavy Lifts near installed equipments.

3.1.4 Management Programs

Requirement -4: *The client will establish management programs that, in sum, will describe mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the project.*

Observation 4: The O&M Contractor has established an Environmental and Social Management and Monitoring Plan to establish and maintain an integrated environment and social management programs. It covers significant environmental and social risk and impacts on employees, contractors and community health and safety.

The monitoring program is based on the Environmental and Social Management and Monitoring Plan (ESMMP) provided in the ESIA Report for the Project, covering pre-construction, construction, operation and decommissioning phases of the Project. The mitigation measures covering air quality emissions; ambient noise; water consumption and risk of contamination; wastewater treatment and disposal; thermal discharge; hazardous material and waste handling, storage and disposal; socio-economic impacts; avoidance and minimization of impacts on culturally significant features; construction workers; community health, safety and security; traffic and transport management; and decommissioning.

There are procedures of EHS Monitoring and Inspection, Annual EHS Work Plan (2016) and for maintaining records of Safety Inspection on monthly basis under implementation, which includes Monthly Environmental Monitoring Progress Report covering emissions, noise, effluents, and ambient air quality. Further, the procedures for EHS and Quality Management Audit System, Safety Production Responsibility Management System are in place. There are procedures available for Waste Management however; it does not include provisions for handling hazardous substances such as Used Oil, Air and Oil filters and oil soaked cloth.

Further, there are formalized procedures for Supplier Management and Vendor selection. The records for social monitoring procedures maintained by SBIIPCL includes verification of child labour, Grievance Register, Community Development Initiatives, Resettlement Focus Group Discussions, Worker Camp Inspections which possesses responsibilities and timelines for implementation. Upon review of the documents, it was observed that two child labour each from SEP, JB Construction Company, Nayem Engineering company and Sonia Company were reported during 21st October, 2014, 11th November, 2014; and 29th December, 2014 respectively during construction phase. The contractors were reportedly warned to ensure that similar incidents do not take place and for recording the addressed issues. The grievance register records highlight the complaints received by the communities, if any and a Grievance Redressal Mechanism (GRM) entails the elements of recording grievances received from communities on quarterly basis and its resolution within the timelines.

3.1.5 Organizational Capacity and Competency

Requirement -5: *The client, in collaboration with appropriate and relevant third parties, will establish, maintain, and strengthen as necessary an organizational structure that defines roles, responsibilities, and*

authority to implement the ESMS. The key environmental and social responsibilities should be well defined and communicated to the relevant personnel and to the rest of the client's organization. Sufficient management sponsorship and human and financial resources will be provided on an ongoing basis to achieve effective and continuous environmental and social performance.

Observation 5: The organizational structure of SBIIPL reveals that an Assistant Manager-EHS and Community Development Manager are responsible for overall management of the Environmental, Health, Safety and Social issues. The organogram of NEPC, O&M Contractor of SBIIPL reveals that there is an EHS Team comprising of an EHS Manager assisted by EHS Engineer (2) and Security-In-Charge (1) further supported by Fire Fighters (2) and Security Guards (10). The EHS Committee constituted is headed by Plant General Manager (PGM) and is responsible for coordinating monthly safety meetings, annual safety inspections and integrating feedback from employees for strengthening environment and safety practice and hazard and mitigation plan.

3.1.6 Emergency Preparedness and Response

Requirement -6: The ESMS will establish and maintain an emergency preparedness and response system so that the client, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment. This preparation will include the identification of areas where accidents and emergency situations may occur, communities and individuals that may be impacted, response procedures, provision of equipment and resources, designation of responsibilities, communication, including that with potentially Affected Communities and periodic training to ensure effective response. The emergency preparedness and response activities will be periodically reviewed and revised, as necessary, to reflect changing conditions.

Observation 6: The Emergency Response Plan prepared comprises of a Response Management Team with delegated roles and responsibilities. It covers emergency arising due to hazards within the plant premises and natural hazards.

NEPC maintains records for conducting mock drill and Joint Mock Drill with Bangladesh Fire Service & Civil Defence. The Material Safety Data Sheet (MSDS) of the identified hazardous chemicals, HIRA Procedures were also available for review. NEPC also maintains records for Confined Space Inventory, Safety Training and Job Hazardous Analysis (JHA) Training.

The records for Accident/Incident Investigation, trainings, Fire Fighting team, First Aid Team, First Aid training Attendance sheet and agreement for Ambulance in Emergencies are available. The Accident Investigation Register comprises of Near Miss, Fatalities, First Aid, Loss Time Accident, location of accident and training records. The Incident Investigation and Reporting procedure comprising of detailed responsibilities, recommendations, Incident Closure Reporting and Action Plan. The Personal Protection Equipments (PPE) Matrix for ensuring safety of workers handling various types of jobs, PPE Compliance Checklist and Inventory of PPE equipments are available and SBIIPL monitors the usage of PPE by contractors as per PPE Management Procedures.

3.1.7 Monitoring and Review

Requirement -7: The client will establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements. Where the government or other third party has responsibility for managing specific risks and impacts and associated mitigation measures, the client will collaborate in establishing and monitoring

such mitigation measures. Where appropriate, clients will consider involving representatives from Affected Communities to participate in monitoring activities.

Observation 7: The Environmental and Social Monitoring and Management Plan (ESMMP) in the ESIA report provides a framework for environmental and social management of the project and operation phase along with dedicated roles and responsibilities and frequency of monitoring.

The EHS Committee comprising of representatives from SBIIPCL and NEPC is responsible for ensuring environmental and social effectiveness through EHS and Quality Management Audit System, Monthly Environmental Progress Reporting for ensuring environmental compliance w.r.t. ESIA requirements and EHSS audit recommendations. The EHS Committee Meeting proceedings are maintained to implement Corrective Action Plan identified based on findings of EHSS audit. There is a mechanism for Internal EHS audit to be conducted by NEPC's O&M EHS committee on annual basis and submission to the management for approval and supervision. The procedure includes reporting requirements for the O&M contractor, site audits jointly with O&M contractor's staff and periodic meetings to ensure that corrective actions based on the findings of the EHSS audit are implemented in a timely manner.

The EHS&S compliance during operations is ensured by conducting a quarterly Environmental monitoring by a third party. It was observed that the identified Corrective Action Plans (CAP) during External Audits is being adhered and records are maintained. The Environmental and Social Audit for the project was conducted during construction phase by a third party in 2014. Further, an Independent Environment, Health, Safety and Social Quarterly Monitoring has also been conducted by a third party in October 2014 and Quarterly Monitoring Reports have been prepared by a third party in May and November, 2015 to assess the compliance status of the project and records are being maintained which reveal compliance w.r.t. agreed Corrective Action Plan (CAP).

The external and internal monitoring records are maintained for effluent quality, ambient air quality, terrestrial and aquatic ecology surveys, surface water quality, ambient noise and noise levels inside the plant premises, temperature change after thermal discharge and Continuous Emission Monitoring System (CEMS) records.

3.1.8 Stakeholder Engagement

Requirement -8: *The client will develop and implement a Stakeholder Engagement Plan that is scaled to the project risks and impacts and development stage, and be tailored to the characteristics and interests of the Affected Communities. Where applicable, the Stakeholder Engagement Plan will include differentiated measures to allow the effective participation of those identified as disadvantaged or vulnerable. When the stakeholder engagement process depends substantially on community representatives, the client will make every reasonable effort to verify that such persons do in fact represent the views of Affected Communities and that they can be relied upon to faithfully communicate the results of consultations to their constituents.*

Observation 8:

Public consultation has been carried out using different techniques such as large consultation/public meetings, small group meetings, and informal meetings. These consultations were conducted in the pre-project situation in 2008, during the ESIA and RAP study stage in 2011 and after completion of Draft ESIA and RAP work as well as following disclosure of these Reports in 2013 and 2014.

A Stakeholder Engagement Plan is under implementation for addressing concerns of Project Affected Households (PAH) and neighbouring communities. It includes Grievance Redressal Mechanism, Livelihood Restoration Plan and Community Development Plan. It comprises of identification of stakeholders, elements of disclosure of project information, Consultation and Participation, Negotiation and Partnership, Grievance Management through Joint

Committee for Community Relations (JCCR) or GRC-Plant and implementation of Corrective Action Plans. The Corrective Action Plans should be based on Livelihood Restoration Plan, GRM, Environmental and Social Impact Assessment, and Community Development Plan. It was observed that the documentation records are being maintained for Public Consultations, grievance redressal meetings, major concerns and outcomes of the meeting. There is also a provision for maintaining Yearly Monitoring Report mentioning status and updates of Stakeholder consultations,

The records of seven stakeholder consultations on monthly basis dated 28th October, 2014; 5th November, 2014; 31st December, 2014; 18th February, 2015; 4th March, 2014; 24th March, 2015 and 30th April, 2015 were available for review. Issues pertaining to Noise, Training, Community Development Plan and drainage were raised by the community.

3.1.9 External Communications and Grievance Mechanism

Requirement -9:

External Communication: Clients will implement and maintain a procedure for external communications that includes methods to (i) receive and register external communications from the public; (ii) screen and assess the issues raised and determine how to address them; (iii) provide, track, and document responses, if any; and (iv) adjust the management program, as appropriate.

Grievance Mechanism for Affected Communities: Where there are Affected Communities, the client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance.

Observation 9: SBIIPCL has maintained an established communication channel at different levels. The Community Development Officer of SBIIPCL is responsible for undertaking Community Development and CSR initiatives and for maintaining records for external communication with villages and response by the Company.

A formal Grievance Redressal Mechanism is in place, which comprises of Grievance Redressal Committee (GRC)-Plant and GRC-Corporate at Plant Site is in place. SBIIPCL has framed another Committee, namely, Joint Committee for Community Relations (JCCR) for addressing and receiving any community grievances directly from the people. The Grievance records and Minutes of Meeting of JCCR are being documented. The grievances are addressed within a maximum timeframe of 2 weeks to 4 weeks and register is updated to include the action taken. The review of the past records indicate that it covers Environmental issues due to impacts on Air Quality, water logging and drainage, Noise and Effluent Quality; Social issues such as Compensation, Employment, Livelihood Restoration measures, Trainings, Community Development and Issues within the plant such as Health and Safety and Labour issues. The GRC Register records indicate the resolved and unresolved grievances and have provisions for recording issues addressed by JCCR, CDM, GRM Committee within stipulated timeframe.

3.1.10 Ongoing Reporting to Affected Communities

Requirement -10: The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities and on issues that the consultation process or grievance mechanism have identified as a concern to those Communities. If the management program results in material changes in or additions to the mitigation measures or actions described in the Action Plans on issues of concern to the Affected Communities, the updated relevant mitigation measures or actions will be communicated to them. The frequency of these reports will be proportionate to the concerns of Affected Communities but not less than annually.

Observation 10: It was observed that JCCR is responsible for community engagement and reporting to affected communities. SBIIPCL is maintaining records closure of identified issues during Stakeholder consultations. The recording of minutes of meeting, communication of project related risks is in place.

3.1.11 Status of Compliance to PS-1

The overall compliance with PS1 is adequate. SBIIPCL in coordination with NEPC, the O&M Contractor has established an effective Environmental, Health, Safety and Social Management System consisting of policies and procedures for managing significant environmental, health, safety and social risks associated with project operations. The compliance against IFC PS1 observed during assessment process is as follows:

1. The EHS&S policies of SBIIPCL in English and local language (Bangla) have been displayed in the main gate and office areas
2. A Hazard Identification and Risk Estimation Control Procedure prepared by NEPC, the O&M Contractor, for identification and control of potential hazards associated with the work activities which is being maintained in Risk Register
3. The Emergency Response Plan prepared comprises of a Response Management Team with delegated roles and responsibilities. It covers emergency arising due to hazards within the plant premises and natural hazards
4. The EHS&S compliance during operations is ensured by conducting a quarterly Environmental monitoring by a third party. It was observed that the identified Corrective Action Plans (CAP) during External Audits is being adhered and records are maintained. Also, an Independent Environment, Health, Safety and Social Quarterly Monitoring is being conducted by a third party from October 2014
5. JCCR is responsible for community engagement and reporting to affected communities. SBIIPCL is maintaining records closure of identified issues during Stakeholder consultations.
6. A Stakeholder Engagement Plan is under implementation for addressing concerns of Project Affected Households (PAH) and neighbouring communities. It includes Grievance Redressal Mechanism, Livelihood Restoration Plan and Community Development Plan.

3.1.12 Recommendations

- None

3.1.13 Material Liability

Significant materiality issues were not identified for the project. SBIIPCL is implementing mitigation measures for environment and social (including safety and community) performance. The monitoring, evaluation, audit and inspection mechanism of SBIIPCL ensures containment of EHS&S issues.

3.2 Performance Standard (PS) 2: Labour and Working Conditions

Applicability to the Project

The PS-2 is applicable for the project as it involves adherence to the various labour laws including clauses on protection of workforce from forced labour and illegal or economically exploitative child labour. At the Project site, SBIIPCL has to ensure that the workers are provided with a safe and healthy work environment and mandate use of personal protective equipment (PPE) by workers during entire life cycle of the project with

appropriate monitoring and inspections provisions. Periodical occupational health and safety related training program needs to be organized for workers at the project site.

3.2.1 Human Resource Management Policy and Procedures

Requirement 11: *The client will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of this Performance Standard and national law.*

Observation 11: The HR Policy and procedures for the sponsor company, Summit Corporation Limited (SCL) and NEPC were available for review. SBIIPCL adopts SCL's HR Policy and procedures comprising of employee compensation and benefits; working hour, travel and leave policy; employee transition policy; grievances; disciplinary actions; employee training and development policy . It includes roles and responsibilities of personnel, non-discrimination policy, HIV/AIDS non-discrimination policy, anti-sexual harassment policy, policy for prohibition of child and forced labor and procurement policies and procedures (PPP) for dealing with contractors and suppliers. The HR Policy has ensured that the O&M Contractor complies with the same while engaging local sub-contractor or contract workers. It also possesses Policies on Non-employment of adolescent and child at workplace; Anti-Discrimination Policy; Anti-Harassment and Abuse at Workplace; which are applicable to all Summit Group Subsidiary Companies.

The labour audit was conducted by BCAS in June, 2015 during construction phase covering SBIIPCL and subcontractor workers of the plant to assess compliance with the national laws and IFC PS2 requirements, and then suggesting corrective action plans for addressing the identified issues and ensuring labor conditions at the plant in compliance with PS-2 requirements. It comprises of corrective actions (CAP) along with responsibility and timeline.

The scope of the audit is as follows:

- Assessment of compliance of worker's condition and terms of employment w.r.t. Bangladesh Labour Law and IFC Performance Standards
- Review of HR policy and procedures of SBIIPCL and NEPC; labour employment documents; wages; and overtime paid to the workers
- Verification of compliance of payment of wages and overtime benefits in accordance with Bangladesh Labour Law
- Assessment of living conditions of the labour camp; review of practices of non-discrimination, prohibition of child and forced labor, retrenchment, labors' organization and grievance mechanism;
- Review the documents of SBIIPCL as well as EPC Contractor regarding workers' health and safety; and contractor management system of SBIIPCL

The HR Policy and procedures of NEPC reveals that the compensation and leave benefits for the labour has been framed in consistency with Labour Laws of Bangladesh. However, the work timings does not comply to the requirements of Labour Laws of Bangladesh according to which an employee/labour is required to work during 8 am to 8 pm in the day shift and 8pm to 8am during night shift. Also, the overtime compensation has been restricted to only 1.5 times the normal basic salary and 2 times of the employees normal hourly basic salary for each hour worked during weekly holidays and public holidays.

The HR Procedures does not provide provisions for overtime compensation of two times basic salary, limiting overtime upto 60 hours/week and informing workers beforehand

The HR Procedure of NEPC includes HIVAIDS Non-Discrimination Policy, Child and Forced Labour Policy, Ethics and Anti-Sexual Harassment Policy however, HR policies of both SBIIPCL and NEPC lack provisions for collective dismissals. The records for wages, and Salary Slips of NEPC employees were found to be in compliance with applicable national laws and legislations.

3.2.2 Working Conditions and Terms of Employment

Requirement 12: *Where the client is a party to a collective bargaining agreement with a workers' organization, such agreement will be respected. Where such agreements do not exist, or do not address working conditions and terms of employment, the client will provide reasonable working conditions and terms of employment.*

Where accommodation services are provided to workers covered by the scope of this Performance Standard, the client will put in place and implement policies on the quality and management of the accommodation and provision of basic services. The accommodation services will be provided in a manner consistent with the principles of non-discrimination and equal opportunity. Workers' accommodation arrangements should not restrict workers' freedom of movement or of association.

Observation 12:

- Wages records for contract workers ensuring payment of minimum wages to the workers
- Provision for a 4 storied Dormitory which has in total 42 rooms for operation team and SBIIPCL's team with attached bathroom facilities and dedicated canteen along with arrangements for breakfast and lunch
- Arrangements for toilet facilities for both men and women in Central Control Building (CCB) at every floor and a dedicated area for taking lunch, dinner and snacks for the operation team of Central Control Room (CCR) at third floor.
- Pantry arrangements at every floor of CCB
- Additional accommodation facilities for security and staffs outside the power plant along with toilet and dining facilities

3.2.3 Worker's Organization

Requirement 13: *In countries where national law recognizes workers' rights to form and to join workers' organizations of their choosing without interference and to bargain collectively, the client will comply with national law. Where national law substantially restricts workers' organizations, the client will not restrict workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment. The client should not seek to influence or control these mechanisms*

Observation 13: The documents for collective bargaining agreement or any trade/worker union at the site was not available for review. However, the HR policy does not restrict labour from joining any trade/worker unions as well. Reportedly, there are no worker/trade unions at the plant.

A Grievance Redressal Mechanism (GRC) is in place for addressing grievances of workers, if any and the records for grievances were available for review. None of the issues related to collective bargaining have been reported till date.

3.2.4 Non-discrimination and Equal Opportunity

Requirement 14: *The client will not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The client will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially with regard to women. The principles of non-discrimination apply to migrant workers.*

Observation 14: The Anti-Discrimination Policy issued by Corporate HR Department of Summit Corporation Limited & its Subsidiaries is applicable for the project. It covers the elements of equal opportunity, discrimination on grounds of caste, creed, sex, religion, marital status; and procedures for addressing the concerns.

The Anti-Harassment and Abuse at Work Policy covers clauses pertaining to Physical, Verbal, Psychological, Sexual and Mental Harassment

3.2.5 Retrenchment

Requirement 15: *The client will carry out an analysis of alternatives to retrenchment prior to implementing any collective dismissals. If the analysis does not identify viable alternatives to retrenchment, a retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers. The retrenchment plan need to be based on the principle of non-discrimination and will reflect the client's consultation with workers, their organizations, and, where appropriate, the government, and comply with collective bargaining agreements if they exist. The client will comply with all legal and contractual requirements related to notification of public authorities, and provision of information to, and consultation with workers and their organizations.*

The client should ensure that all workers receive notice of dismissal and severance payments mandated by law and collective agreements in a timely manner. All outstanding back pay and social security benefits and pension contributions and benefits will be paid (i) on or before termination of the working relationship to the workers, (ii) where appropriate, for the benefit of the workers, or (iii) payment will be made in accordance with a timeline agreed through a collective agreement. Where payments are made for the benefit of workers, workers will be provided with evidence of such payments.

Observation 15: The HR policies of SBIIPCL and NEPC lack the provisions for collective dismissals. It is understood that the workers are employed on direct and contract basis through contractors only. Contract workers are informed of the duration of work and other job related requirements prior to recruitment. Though reportedly, there have not been any occurrence of collective dismissals in the past and no such dismissals are intended in near future. However to ensure transparency for any unforeseen situations involving collective dismissals, retrenchment procedures should be formulated as part of both HR policies.

3.2.6 Grievance Mechanism

Requirement 16: *The client will provide a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. The client will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them. The mechanism should involve an appropriate level of management and address concerns promptly, using an understandable and transparent process that provides*

timely feedback to those concerned, without any retribution. The mechanism should also allow for anonymous complaints to be raised and addressed. The mechanism should not impede access to other judicial or administrative remedies that might be available under the law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.

Observation 16: The Grievance Redressal Mechanism provides scope for raising concerns by the employees along with responsibilities, timelines and Corrective Action Plan for addressing the issues. NEPC has framed a two-tiered grievance redress procedure through GRC-Plant Committee which is responsible for addressing issues of the the labor or contractor or subcontractor personnel.. In case, an issue remains unresolved the employees may raise their concern to GRC-Corporate and the issues will be resolved by another committee (GRC-NEPC-SBIIPL) where members from SBIIPL will be present to address and supervise the grievances more effectively. The records are being maintained in Grievance Register and records for monitoring and redressal of grievance issues were available for review. The records comprises of details of the issue/grievance, date of submission of grievance, date of closure of identified issues, provisions for follow-up actions and action plan for resolving issues.

There are provisions of Grievance Box (2 nos.) at entrance of the plant, Grievance logbook which will be maintained by Safety Supervisor to receive grievances from Site and also provision for display of contact numbers of NEPC team within the GRC-Plant.

It was observed that EHS Manager of NEPC is required to put up grievance to the GRC-Plant on a merit basis (merit of the grievance) and GRC-Plant meeting is scheduled on quarterly basis or upon the request of EHS Manager. The grievances need to be addressed in a time-bound manner. The EHS Manager is required to address the issue within 2 weeks from the date of receiving grievance after which the issues are addressed by GRC-Plant within 3 weeks. In case grievances are not addressed at GRC-Plant level, GRC-Corporate Committee comprising of representatives from GRC-NEPC-SBIIPL are required to address the issues/grievances within 4 weeks.

The grievances reported from September, 2014 till March, 2015 includes quarrel amongst workers, unavailability of Personal Protective Equipments, unavailability of medicine from Medical Center and Job Security of Migrant workers.

3.2.7 Child Labour

Requirement 17: *The client will not employ children in any manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. The client will identify the presence of all persons under the age of 18. Where national laws have provisions for the employment of minors, the client will follow those laws applicable to the client. Children under the age of 18 will not be employed in hazardous work. All work of persons under the age of 18 will be subject to an appropriate risk assessment and regular monitoring of health, working conditions, and hours of work.*

Observation 17:

The Policy on "Non-Employment of Adolescent and Children at Work" issued by HR Department for Summit Power and its Subsidiary Companies clearly defines the minimum age of employment and Action Plan for breaching this Policy. Further, the Child Labour verification records are maintained by NEPC, which includes reporting and monitoring mechanism while hiring sub-contractors. Upon review of the documents, it was observed that two child labour from SEP, JB Construction Company, Nayem Engineering company and Sonia Company were reported

during 21st October, 2014, 11th November, 2014; and 29th December, 2014 respectively during construction phase. The contractors were warned to ensure repeated incidents do not take place and for recording the addressed issues.

3.2.8 Forced Labour

Requirement 18: *The client will not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labour, such as indentured labour, bonded labour, or similar labour-contracting arrangements. The client will not employ trafficked persons*

Observation 18: The element for Forced and trafficked Labour is not covered in the HR Procedure.

3.2.9 Occupational Health and Safety

Requirement 19: *The client will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the client's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women. The client will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, as far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice, as reflected in various internationally recognized sources including the World Bank Group Environmental, Health and Safety Guidelines,*

the client will address areas that include the (i) identification of potential hazards to workers, particularly those that may be life-threatening; (ii) provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) training of workers; (iv) documentation and reporting of occupational accidents, diseases, and incidents; and (v) emergency prevention, preparedness, and response arrangements.

Observation 19:

- NEPC monitors health and safety management w.r.t. Job Safety Analysis Method and Implementation Management Standard.
- The procedures for HIRA, EHS and Personal Safety Management Subsystem, Hazardous Work and Safety Risk Assessment System, Work Permit Room and Work Permit Management Standard, Accident Investigation Organization and Management Standard and SOP on Confined Space Safety have been maintained.
- Two (2) cases of Near Miss and one (1) case of Near Miss were reported in January and February 2016 based on review of Accident Investigation Register (AIR) that. However, no case of First Aid, Fatality and Loss Time Accident has been reported.
- SBIIPCL maintains records for Safety Training, EHS Training, Job Hazard Analysis training (JHA) to the workers and Vehicle Safety Training to the workers.
- NEPC maintains records for Mock Drills, inventory for Confined Spaces, Work Permit records for working at Heights, Working in Confined Spaces, Excavation Work and Hot Work Permits.
- Lock Out-Tag Out (LOTO) procedure has been prepared and being implemented by NEPC.
- The training modules have been framed by NEPC for imparting Occupational, Health and Safety Training to the workers. It includes Electrical Safety, Crane & Lifting Equipments, Power & Hand Tools Safety, Fire

protection, Security Management. The training to the workers is provided as per training needs as provided in training calendar. It encompasses training for the following:

- Safe Working Practice
 - EHS Policy
 - Proper use of PPE
 - Electrical Safety, Hydrogen Gas Safety and Compressed Gas Cylinder Handling
 - Emergency Response Procedure
 - Plant Fire Fighting procedure
 - Waste Management Procedure
 - Safe Chemical Handling and Oil Handling
 - Spill Control & Response Management Plan
 - Permit To Work procedure
- SBIPCL imparts First Aid training to employees and maintain records.
 - A Task Force Committee for fire-fighting has been framed. NEPC maintains records for Inspection and Monitoring of Fire Trucks. The inventory of Fire Extinguishers was however not available for review.
 - SBIPCL is also maintaining records for Accident and Fatality Records, Incident/Near Miss Cases
 - The Personal Protection Equipments (PPE) Management Procedure, PPE Matrix for ensuring safety of workers handling various type of jobs, PPE Compliance Checklist and Inventory of PPE equipments are in place.
 - There are provisions for EHS Inspections on Weekly basis, maintaining records for Monthly Safety Inspections.

3.2.10 Workers Engaged by Third Parties

Requirement 20: *With respect to contracted workers the client will take commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the requirements of this Performance Standard. The client will establish policies and procedures for managing and monitoring the performance of such third party employers in relation to the requirements of this Performance Standard. In addition, the client will use commercially reasonable efforts to incorporate these requirements in contractual agreements with such third party employers.*

The client will ensure that contracted workers have access to a grievance mechanism. In cases where the third party is not able to provide a grievance mechanism the client will extend its own grievance mechanism to serve workers engaged by the third party.

Observation 20:

The HR procedures of NEPC encompasses the elements of Grievance Redressal Mechanism which is available to both employees and labour. It was observed that an employee or labour may put up verbal complaint for dissatisfaction regarding discipline, job posting, denial of personal request, promotions, compensation, increments, level or working conditions etc. to his senior who is required to address the issue within five (5) working days. An employee has the right to appeal it to the Departmental Manager in writing with a copy to Admin & HR Department within three working days after receipt of the Senior manager's reply if the issue remains unresolved.

The Departmental Manager in consultation with the Admin & HR department can look into the matter and give the employee an opportunity of being heard. The employee is informed in writing within five days of receiving the grievance note. The matter may be further escalated to the General Manager through Admin & HR department in case issue remains unresolved. The General Manager will then initiate thorough investigation and a fair hearing opportunity is be given to the employee and the decision communicated to the employee within fifteen days which shall be final and binding.

3.2.11 Supply Chain

Requirement 21: *Where there is a high risk of child labour or forced labour in the primary supply chain, the client will identify those risks. If child labour or forced labour cases are identified, the client will take appropriate steps to remedy them. The client will monitor its primary supply chain on an ongoing basis in order to identify any significant changes in its supply chain and if new risks or incidents of child and/or forced labour are identified, the client will take appropriate steps to remedy them.*

Additionally, where there is a high risk of significant safety issues related to supply chain workers, the client will introduce procedures and mitigation measures to ensure that primary suppliers within the supply chain are taking steps to prevent or to correct life-threatening situations. The ability of the client to fully address these risks will depend upon the client's level of management control or influence over its primary suppliers. Where remedy is not possible, the client will shift the project's primary supply chain over time to suppliers that can demonstrate that they are complying with this Performance Standard.

Observation 21: A Supplier Management Procedure of SBIIPCL is used to screen vendors before engaging them for the project activities. It encompasses elements of Roles and Responsibilities, assessment procedures, and de-registration of vendors. It comprises of adherence to Labour Laws of Bangladesh and payment of wages and overtime allowance in accordance with labour laws. It also comprises of stipulations of non-engagement of child labour, non-discrimination of employees and framework for grievance redressal. However, the compliance to labour laws by the vendors is not covered under Supplier Management Procedure.

3.2.12 Status of Compliance to PS-2

SBIIPCL is compliant to aspects such as Non-discrimination and Equal Opportunity; Grievance Mechanism; Occupational Health and Safety and Workers Engaged by Third Parties. However, the following non-compliances against IFC PS-2 observed during the assessment process are as follows:

1. The HR Procedures do not provide provisions for overtime compensation of 2 times basic salary, limiting overtime upto 60 hours/week and informing workers beforehand.
2. The HR policies of SBIIPCL and NEPC lack the provisions for collective dismissals.
3. There are no labour unions at present on site however, there are no procedures to handle issues of worker unions in future
4. The element for Forced and trafficked Labour is not covered in the HR Procedure.

3.2.13 Recommendations

1. Efforts needs to be made to maintain Guidance Manual/SOP on collective bargaining and formation of lawful workers unions w.r.t applicable national laws and legislations
2. Retrenchment procedures should be formulated as part of HR policies of both SBIIPCL and NEPC to ensure transparency for any unforeseen situations involving collective dismissals
3. The work timings and overtime compensation benefits needs to be consistent with Labour Laws of Bangladesh.
4. The element for Forced Labour needs to be covered in the HR Procedure Manual for verifying the procedure for checking employment of traffic persons

3.2.14 Material Liability

The significant materiality issues are not applicable as policies, procedures and guidelines for ensuring acceptable working conditions for labour are in place. SBIIPCL has documented procedures, inspections and monitoring mechanism for assessing performance of Contractors for ensuring Health and Safety conditions of workers.

3.3 Performance Standard (PS) 3: Resource Efficiency and Pollution Prevention

Applicability to the Project

SBIIPCL, being a thermal power project, triggers the requirements of PS3 therefore it has to ensure that measures for energy efficiency, pollution prevention, waste minimization, and Hazardous Waste Management are being implemented are undertaken for minimizing impacts on environment and community.

3.3.1 Resource Efficiency

General

Requirement 22: *The client will implement technically and financially feasible and cost effective measures for improving efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities.*

Observation 22:

- SBIIPCL has Combined Cycle operations which leads to generation of 355.56 MW power generation at a heat rate of less than 7420 KJ/KWh which is much more energy efficient as compared to the committed heat rate and power output given in PPA agreement and EPC Contract.
- Further, SBIIPCL is taking measures to reduce emissions by installing stack of 70 m height and use of Low NOx burners (<25 ppm).
- The treated water from STP, Cooling Tower and HRSG blowdown is sent to the Central Monitoring Basin (CMB) (600 m³ capacity) where it mixes with treated effluent from ETP and from where the combined treated stream is discharged to the river through a pipeline. The storm water channel is also connected to the same pipeline which has outfall in the river.
- SBIIPCL tests the quality of treated combined wastewater on quarterly basis by an external laboratory and the monitoring analysis of the physico-chemical parameters including BOD, COD, TSS were found within the permissible limits of IFC, World Bank and DoE standards.

Greenhouse Gases

Requirement 23: *In addition to the resource efficiency measures described above, the client will consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GHG emissions during the design and operation of the project.*

Observation 23: It was observed that the IFC recommended Carbon Emissions Estimated Tool (CEET) was used for Greenhouse Gas estimation according to which the CO₂, CH₄ and N₂O emissions have been estimated as 56 Tons/TJ, 0.001 Tons/TJ and 0.00001 Tons/TJ respectively during operations. The review of Third Independent Quarterly Environment and Social Monitoring Report indicates that SBIIPCL maintains records for Greenhouse Gas Emissions estimation based on the actual operations of the project

Water Consumption

Requirement 24: *The client shall adopt measures that avoid or reduce water usage so that the project's water consumption does not have significant adverse impacts on others. These measures include, but are not limited to, the use of additional technically feasible water conservation measures within the client's operations, the use of alternative water supplies, water consumption offsets to reduce total demand for water resources to within the available supply, and evaluation of alternative project locations.*

Observation 24: The water consumption records during operation phase duly signed and approved by an authorized personnel maintained by NEPC indicate water optimization and less consumption than the water abstracted quantities mentioned as 10000 m³/ day during operations defined in ESIA Report. It comprises of cooling water ('make-up' water) abstracted from Kushiyara River at a rate not exceeding 1,200 m³/hr. The demineralised water is required for use in the Heat Recovery Steam Generator (HRSG), as well as service water, fire-fighting water and potable drinking water. The plant maintains record for water consumption.

3.3.2 Pollution Prevention

Requirement 25: *The client will avoid the release of pollutants or, when avoidance is not feasible, minimize and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and trans-boundary impacts.*

Observation 25:

It was observed that the records for Emission monitoring, effluent discharge, noise monitoring on monthly basis are being maintained however, documentation for implementation of climate change adaptation Study for the plant is not being carried out. The adaptation procedures for increase in air temperature, water temperature, flash floods, and riverbank erosion were not available for review.

Stack emission monitoring

As per review of Third Quarterly Environmental and Social Monitoring Report conducted by a Third Party, the stack parameters have been revised from the earlier stack height of 60 m and stack diameter as 3.0 m to stack height as 70 m and diameter as 7.0 m.

- The air quality dispersion modelling was carried out by BCAS in July, 2015 taking into considerations the revised stack specifications and flue gas velocity. The highest concentrations of NO_x and CO for stack height of 70 meters was observed as 1.95 µg/m³ and 2.25 µg/m³ while the highest concentrations of NO_x

and CO was observed as 2.32 $\mu\text{g}/\text{m}^3$ and 2.69 $\mu\text{g}/\text{m}^3$. The concentrations of NOx and CO were thus observed to be lower with a stack height of 70 m than the stack height of 50 meters.

- The predicted maximum concentrations of NOx and CO after air quality modelling were observed as 13.94 $\mu\text{g}/\text{m}^3$ and 133.25 mg/Nm^3 respectively.
- The CEMS monitoring records of February, 2016 reveals that the concentration of NOx, SO₂ and PM₁₀ are below the permissible limits of Bangladesh DOE, IFC and World Bank. The CEMS monitoring records are given below in **Table 3.1**

Table 3-1: CEMS Monitoring Observations (Feb 2016)

S. No.	Parameters	Monitored values	DOE Standards (mg/Nm^3)	IFC standards (mg/Nm^3)	World standards (mg/Nm^3)	Bank
1.	PM 10	20.21-28.69	150	50	N.A.	
2.	SO ₂	0-39.56	N.A.	N.A.	N.A.	
3.	NOx	0.73-31.34	75	47	51	
4.	CO	1.38-175.83	N.A.	N.A.	N.A.	

- The values of CO monitored on 8-hourly basis and NOx monitored on 24-hourly basis as per Ambient Air Quality monitoring at three (3) locations are well within the permissible limits of Bangladesh DOE, IFC and World Bank. Further, the concentrations of CO and NOx monitored are below the predicted values of air quality modelling. The monitored values of CO and NOx vis-à-vis predicted values in air quality modelling are given below in **Table 3.2**

Table 3-2: Comparison of Air Quality Monitoring and Air Quality Modelling Results

S. No.	Parameters	Values observed during Air Quality Monitoring	Predicted maximum values observed during Air Quality Modelling	DOE Standards ($\mu\text{g}/\text{m}^3$)	IFC standards ($\mu\text{g}/\text{m}^3$)	World standards ($\mu\text{g}/\text{m}^3$)	Bank
1.	CO	378.98 - 1211.68	13.94	10000	150	150	
2.	NOx	2.8 - 24.69	133.25	150	N.A.	N.A.	

Ambient Air Quality Monitoring

The ambient air quality monitoring carried out at 3 stations during January, 2016 revealed that the NOx, CO and PM10 concentration were within the permissible limits of Bangladesh DOE, IFC and World Bank. However, PM2.5 levels were observed to be exceeding permissible limits of Bangladesh DOE and IFC due to civil construction work at three sides of the plant premises. The ambient air quality monitoring observations are given below in **Table 3.3**.

Table 3-3: Ambient Air Quality Monitoring Observations

S. No.	Parameters	Monitored values	DOE Standards ($\mu\text{g}/\text{m}^3$)	IFC standards ($\mu\text{g}/\text{m}^3$)	World Bank standards ($\mu\text{g}/\text{m}^3$)	Bank
1.	PM 10	103.76-125.37	150	150	150	
2.	PM2.5	99.7-140.14	65	75	N.A.	
3.	SO ₂	23.91-74.64	365	125	80	
4.	NO _x	2.8-24.69	100	200	150	
5.	CO	378.98-1211.68	10000	N.A.	N.A.	

Water Quality Monitoring

The surface water quality monitoring was conducted at 4 locations and the physico-chemical parameters including pH, BOD, COD, TDS, TSS were found within the permissible limits of DOE. The surface water quality monitoring analysis is given below in **Table 3.4**.

Table 3-4: Surface Water Quality Monitoring Observations

S. No.	Parameters	Monitored values	DOE Standards (mg/l)
1.	pH	7.16-7.82	6.5-8.5
2.	BOD	0.2-1.3	0.2 mg/l
3.	COD	2.5-3.8	4mg/l
4.	TDS	42-146	1000 mg/l
5.	Oil & Grease	0	0.01 mg/l

Effluent Quality Monitoring

The effluent quality monitoring analysis of December, 2015 shows that the physico-chemical parameters including pH, BOD and COD, and Oil & Grease were within the permissible limits of DOE, IFC and World Bank. The effluent quality monitoring analysis is given below in **Table 3.5**.

Table 3-5: Analysis of Effluent Quality Monitoring

S. No.	Parameters	Effluent Quality	Bangladesh DOE	WHO/IFC
1.	pH	7.23	6-9	6-9
2.	BOD (mg/l)	11mg/l	50 mg/l	50 mg/l
3.	COD (mg/l)	23mg/l	200 mg/l	250 mg/l
4.	Oil & Grease	<0.5 mg/l	10 mg/l	10 mg/l

Noise Monitoring

Ambient Noise Monitoring

Ambient Noise Monitoring were conducted at 8 locations within the plant during January, 2016 and the monitoring results shows that Lday and Lnight values are within the permissible limits of DOE. The noise monitoring analysis is given below in **Table 3.6**.

Table 3-6: Analysis of Ambient Noise Monitoring

S. No.	Parameters	Monitored values dB(A)	Bangladesh DOE
1.	Lday	69.8-74.8	6-9
2.	Lnight	61.0-68.1	50 mg/l

Noise monitoring inside the Plant

Noise level monitoring inside the plant premises was conducted at 17 locations and the Occupational Exposure to noise levels of the workers were observed to be within the permissible limits of World Bank. The noise monitoring analysis inside the plant is given below in **Table 3.7**.

Table 3-7: Analysis of Noise Monitoring inside Plant premises

S. No.	Parameters	Monitored values dB(A)	World Bank Standards, dB(A)
1.	Lday	72.2-92.95	110
2.	Lnight	75.9-90.25	

Thermal Discharge Monitoring

Reportedly, there is a provision for online meter for temperature measurement due to thermal discharge at upstream, downstream and at point of discharge. SBIPCL has a provision for maintaining online temperature monitoring records and physical records on regular basis from waste water monitoring basin where all the treated water stored after treatment before discharging to the outfall, upstream and downstream of Kushiyara River for assessment of change in temperature, if any.

Wastewater analysis conducted on monthly basis also comprises of monitoring temperature of the effluent at the point of discharge into Kushiyara River. The monitoring results show that the temperature varied from 24-27⁰C which is within the permissible limits of 40⁰C of Bangladesh DOE. However, the records for monitoring conducted at 20 m upstream and 20 m downstream of Kushiyara River were not available for review.

The wastewater analysis comprises of monitoring physico-chemical properties of water samples and temperature of the effluent at the point of discharge, upstream and downstream of Kushiyara River. The internal monitoring records are maintained on monthly basis and a third party carries out monitoring on quarterly basis. The monitoring results from January-April, 2016 show that the temperature at discharge point varied from 24-29⁰C; temperature at 50 m upstream of Kushiyara River varied from 20.8-28.8⁰C; and temperature at 50 m downstream of Kushiyara River was observed to vary from 21.1-29⁰C which is within the permissible limits of 40⁰C of Bangladesh DOE. There is no Thermal Plume modelling conducted for the Plant as part of ESIA to envisage impacts on temperature change in Kushiyara River.

SBIIPCL has conducted an Aquatic Ecological Monitoring Survey in November 2015 to assess the limnological and fisheries conditions for the impact zone of SBIIPCL project situated on the bank of the Kushiyara river in order to compare these findings with those of the baseline study for the same project. It was observed from the study findings that Kushiyara River possesses good water quality and rich biodiversity like the baseline study. This study also found almost similar fisheries conditions (population, market and fishers' livelihoods) like the baseline study. Therefore, the study concluded that the SBIIPCL project has not yet posed any considerable impact on the water quality, aquatic biodiversity and fisheries conditions.

Wastes

Requirement 26: *The client will avoid the generation of hazardous and non-hazardous waste materials, where waste generation cannot be avoided, the client will reduce the generation of waste, and recover and reuse waste in a manner that is safe for human health and the environment.*

Observation 26:

- The records for hazardous and general waste such as Paper, Plastic and Kitchen material are being maintained.
- The Waste Management Procedure and Hazardous Chemicals Handling Procedure are available which covers caustic, acids and alkali handling procedure, acids and chemicals like ammonia, hydrazine and sodium hypochlorite.
- The details of designated Scrapyard for storage of wastes were not available for review.
- NEPC has signed a contract agreement with M/s. Rima Enterprises for waste collection, disposal and management vide letter dated 1st April, 2016 according to which the waste needs to be collected from plant once in every two (2) days i.e. 15 days on monthly basis.

Hazardous Material Management

Requirement 27: *The client will avoid or, when avoidance is not possible, minimize and control the release of hazardous materials. In this context, the production, transportation, handling, storage, and use of hazardous materials for project activities should be assessed. The client will consider less hazardous substitutes where hazardous materials are intended to be used in manufacturing processes or other operations. The client will avoid the manufacture, trade, and use of chemicals and hazardous materials subject to international bans or phase-outs due to their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer.*

Observation 26:

- The records for hazardous waste material were available for review, which envisages provision of hazardous waste generation from Fuel, or Oil soaked cloth and Oil filter.
- SBIIPCL possesses a Chemical Handling Procedure ensuring safe unloading and handling of chemicals and for providing guidelines in the case of spills or leaks. It comprises of dedicated roles and responsibilities, emergency, accidental, fire-fighting response plans along with toxicological, ecological and disposal considerations.
- It was reported that SBIIPCL in the process of entering into Agreement with M/s. Rima Enterprises, a DOE approved authorized Hazardous Waste Management Agency for handling, disposal and management

of hazardous waste generated by 31st May 2016. The agency is authorized to handle Furnace Oil, Used & Empty Drums, Used Mobil Oil, and Electric Sludge. Verification of their disposal process is being carried out presently by visiting its disposal facility.

- The hazardous waste storage shed has been reportedly constructed on the back-side of cooling towers on top of the storm water drainage network and there are no arrangements for secondary containment for capturing any spillage from this area. There are a number of openings provided in this area, and any spillage from this area can directly enter storm water drainage and eventually into Kushiyara river.
- Reportedly, there are no display of warning signages in the acid and alkali storage area and arrangements for spill kits at storage area to control any accidental leakage during loading and unloading of acid and alkali tanks

Pesticide Use and Management

Requirement 28: *The client will, where appropriate, formulate and implement an integrated pest management (IPM) and/or integrated vector management (IVM) approach targeting economically significant pest infestations and disease vectors of public health significance. The client's IPM and IVM program will integrate coordinated use of pest and environmental information along with available pest control methods, including cultural practices, biological, genetic, and, as a last resort, chemical means to prevent economically significant pest damage and/or disease transmission to humans and animals.*

Observation 28: It was confirmed from the client that SBIIPCL is not using any Pesticides at present however; it shall adhere to the Pesticide Use and Management Guidelines in case pesticides is being used in future.

3.3.3 Status of Compliance to PS-3

SBIIPCL is partly compliant to the provisions mentioned in PS-3. The non-compliances against IFC PS-3 observed during the assessment process are as follows:

1. Reportedly, there are no display of warning signages in the acid and alkali storage area and arrangements for spill kits
2. Reportedly, there are no arrangements for secondary containment for capturing any spillage from the hazardous waste storage area. There are a number of openings provided in this area, and any spillage from this area can directly enter storm water drainage and eventually into Kushiyara river.

3.3.4 Recommendations

1. Display of warning signages in the acid and alkali storage area and arrangements for spill kits at storage area needs to be made to control any accidental leakage during loading and unloading of acid and alkali tanks
2. Arrangements for secondary containment and to prevent mixing of hazardous waste with storm water needs to be made.

3.3.5 Material Liability

The project does not trigger any issues under PS-4 that would lead to material liability issues and would impose threat to environment, health and community.

3.4 Performance Standard (PS) 4: Community Health Safety and Security

Applicability to the Project

The project triggers the requirements under PS5 as it poses risks to environment, community health and safety during construction and operation phase. Provisions for Emergency preparedness and Response Plans, Hazardous Materials Management and Safety, Infrastructure and Equipment Design and Safety needs to be ascertained to avoid detrimental impacts on health and safety of workers and neighbouring communities.

3.4.1 Community Health Safety

Requirement 29 : Infrastructure and Equipment Design and Safety: *The client will design, construct, operate, and decommission the structural elements or components of the project in accordance with GIIP, taking into consideration safety risks to third parties or affected Communities. When new buildings and structures will be accessed by members of the public, the client will consider incremental risks of the public's potential exposure to operational accidents and/or natural hazards and be consistent with the principles of universal access.*

Observation 29: SBIIPCL is operating plant in accordance with GIIP (good international industry practice), taking into consideration safety risks to third parties or Affected Communities. The plant area including construction/laydown area to the north of the SBIIPCL is situated at an elevation of 11.2 m above msl (i.e. approximately 1.05 m above the highest recorded flood level.)

The land raising has been carried out to protect SBIIPCL from flash floods. There is a provision for storm and possible flood water drainage system extending to the low lying seasonal beel to the south and east of the power plant approximately 1km from the Project Site to ensure that incidence of flooding or water logging is being avoided especially in the resettlement area and immediate low lying areas.

The Grievance Redressal Committee addresses the grievances for Environmental and Social issues arising from the community. The grievances reported for the environmental issues includes Air Quality, Water Quality, waterlogging and drainage, and Community Safety. The Social issues include compensation, employment, livelihood, vocational training and issues related to Community Development Plan.

The traffic management measures comprises of depicting clear signpost, signages on speed limit of 20 km/hour, no honking etc. has been provided along the both sides of the access road. The drivers have been instructed to follow traffic routes, run their vehicle through the access road and avoiding village roads to ameliorate the impacts on community safety. The driver's safety training records are maintained however; no records on inventory of vehicles in operation, PUC and certificate of fitness have been maintained.

Requirement 30: Hazardous Materials Management and Safety: *The client will avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project. Where there is a potential for the public (including workers and their families) to be exposed to hazards,*

particularly those that may be life threatening, the client will exercise special care to avoid or minimize their exposure by modifying, substituting, or eliminating the condition or material causing the potential hazards.

Observation 30: SBIIPCL has conducted Quantitative Risk Assessment Studies and has envisaged the risk of chemical spillage, oil spillage, hazardous material leakage and has covered the same under Emergency Preparedness and Response Plan; and Spill Prevention and Response Plan.

Requirement 31: Ecosystem Services: *The project's direct impacts on priority ecosystem services may result in adverse health and safety risks and impacts to affected Communities. with respect to this Performance Standard, ecosystem services are limited to provisioning and regulating services as defined in paragraph 2 of Performance Standard 6*

Observation 31: Reportedly, the temperature monitoring of thermal discharge at 50 m upstream, 50 m downstream and at point of discharge has been maintained on monthly basis. An aquatic survey has been conducted by SBIIPCL by engaging a third party expert in November 2015 to assess the limnological and fisheries conditions for the impact zone of project. Further, there is no Thermal Plume modelling conducted for the Plant to envisage impacts on temperature change in Kushiyara River. An aquatic survey has been conducted by SBIIPCL by engaging a third party expert in November 2015 to assess the limnological and fisheries conditions for the impact zone of project. A total of 34 species of fishes have been recorded from the study site during both peak and lean season fishing

The plant is located adjacent to the southern bank of the Kushiyara River and it was being confirmed by plant personnel that records for riverbank erosion which might lead to loss of agricultural land are being maintained.

SBIIPCL has also conducted a Climate Change Adaptation Study and the potential risks considered includes damage to plant infrastructure, reduction in water availability, increase in air and water temperature. The Regional Climate Model (RegCM3) system originally developed at the National Center for Atmospheric Research (NCAR) was for used for climate change modelling. The climate threats identified in Climate Adaptation Study includes changes in air and water temperatures, Flash Floods and Riverbank erosion and measures devised for adaptation to the climate change are given below:

1. **Rising Air temperature**-Customizing turbine technology, installation of Inlet Air cooling, and upgradation of Compressor
2. **Rising River Temperature**-Using free cooling systems, upgradation of heat exchangers, increase in flow rate, redesigning intake and discharge structures and conversion to hydro-coupling
3. **Flash Floods**-Devising Flood forecasting, flood management infrastructure and flood evacuation shelters
4. **Riverbank Erosion**- Proper construction of embankments with iron sheet and spurs; strengthening the banks other than using riprap; construction of polders with sacks, concrete blocks, articulated concrete mattresses and soil cement; construction of Windrows and Trenches; and construction of Retaining Walls such as Gravity Walls, Cantilever Walls and Sheet-Piling Walls

Requirement 32: Community Exposure to Disease: *The client will avoid or minimize the potential for community exposure to water-borne, water based, water-related, and vector-borne diseases, and communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups.*

Observation 32:

None of the activities carried out at Plant premises has potential for community exposure to water borne, water based and communicable diseases.

Requirement 33:Emergency Preparedness and Response: *In addition to the emergency preparedness and response requirements described in Performance Standard 1, the client will also assist and collaborate with the affected Communities, local government agencies, and other relevant parties, in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to respond to such emergency situations.*

Observations 33: The Emergency Response Procedure covers response plan for possible emergencies such as fire, hazardous spills, severe weather conditions and emergency evacuation. The risk due to Accidental fires thereby affecting nearby communities are also covered. SBIIPCL has a Fire Fighting team in place comprising of qualified professionals and also possess provision for inspection monitoring of fire trucks.

The Fire Extinguisher inspection records are being maintained on monthly basis. SBIIPCL has its own Security team who are continuously guarding the plant on a shift basis. SBIIPCL share leaflet throughout the villages and arrange meeting on the health hazard to inform measures to be taken in case of any emergency. Moreover, SBIIPCL has involved one qualified doctor for the villagers, where they can take free treatment if required.

The Emergency Response Procedure comprises of a detailed framework of Emergency Response team and dedicated roles and responsibilities. It covers the following aspects:

- Discovery procedure
- Initial response
- Sustained actions
- Termination and follow-up actions
- Fire and explosion response
- Gas fire/ Gas leakage
- Medical emergency response and evacuation
- Oil Spill Response and Hazardous materials release
- .Chlorine emergency response
- Severe weather response(Rain, Flood)
- Earth quake response
- Bomb threat response

The evacuation, rescue, fire-fighting, Mock Drill and Post-Emergency Procedures procedures are covered in the Emergency Response Plan.

It also encompasses the elements of Off-Site Emergency Response Procedures under which residents in the vicinity of the plant may be required to evacuate their homes in serious emergencies such as chlorine release, fire, or an explosion.

The evacuation, if required will be carried out with the help of Local JCCR committee, police department and fire department. The EHS & CDO Manager in Emergencies shall arrange a meeting with JCCR committee, PAP's, neighbouring community, Fire Department representative (if possible) and police department

representative (if possible) to discuss issues related to community emergency response. The provisions for maintaining records for Minutes of this meeting in file for at least three years are also clearly defined.

3.4.2 Security Personnel

Requirement 34: *When the client retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by its security arrangements to those within and outside the project site. In making such arrangements, the client will be guided by the principles of proportionality and good international practice 3 in relation to hiring, rules of conduct, training, equipping, and monitoring of such workers, and by applicable law.*

Observation 34: Reportedly, the plant premises is secured by perimeter fencing and deployed security personnel onsite and adequate lighting is provided to detect spills occurring during hours of darkness. The fencing protects the community from major hazards associated with hazardous materials incident, oil spillage or process failure as well as nuisance issues related to noise, and emissions.

3.4.3 Status of Compliance to PS-4

The plant is compliant w.r.t. Infrastructure Equipment Design and Safety, Hazardous Materials Management and Safety; and Emergency Preparedness and Response covered under PS-4 however, following non-compliances against IFC PS-4 has been observed during the assessment process:

1. The records on inventory of project vehicles in operation, PUC and certificate of fitness were not available.

3.4.4 Recommendations

1. The vehicles deployed during operations should have driving license and PUC certificate and records should be properly maintained.

3.4.5 Material Liability

The project does not involve material liability issues of significance as SBIIPCL has taken measures to ensure Safety and Emergency Preparedness and Response measures thereby minimizing the scope of community exposure to diseases

3.5 Performance Standard (PS) 5: Land Acquisition and Involuntary Resettlement

Applicability to the Project

The project triggers requirements of PS5 ensuring that considerable feasible alternative measures to avoid or minimize physical and/or economic displacement, balancing environmental, social and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable are being undertaken.

3.5.1 General

Requirement 35: Project Design

The client will consider feasible alternative project designs to avoid or minimize physical and/or economic displacement, while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable.

Observation 35: As per review of ESIA Report, it was observed that alternative site assessment was not done as BPDB had already identified the site and initiated the process of land acquisition at the Project Site for SBIIPCL. The location of site was finalized after consideration of proximity to Gas field and source of water supply. However, due consideration was given to identify shortest route between Gas field and project site thereby avoiding residential settlements wherever possible and also minimizing impacts on environment.

Requirement 36: Compensation and Benefits for Displaced Persons

When displacement cannot be avoided, the client will offer displaced communities and person's compensation for loss of assets at full replacement cost and other assistance to help them improve or restore their standards of living or livelihoods, as provided in this Performance Standard.

Observation 36: The details on 376 Project Affected Households, 2598 Project Affected Persons, 138 agricultural labour, records for resettlement of displaced persons, resettlement site focus group discussions and consultation proceedings were available for review. The review of the Resettlement Action Plan suggests that out of 376 PAH, 15 PAH are included under fully resettled category; and 12 PAH are included under partially resettled category who have lost partial homesteads, pond stair, trees and other assets and needs to be compensated. The PAP also comprises of 109 landowners whose land has been acquired for power plant, construction lay down area, access road and switchyard; 133 landowners whose land has been acquired for construction of gas pipeline; 54 Khas cultivators and 53 sharecroppers.

The agricultural labour (138 no.) identified were not considered as PAPs as they are seasonal workers employed for a short time during planting and harvesting periods only and work in some other income-generating activities for the rest of the year. Therefore, it was observed SBIIPCL has included them in the Livelihood Restoration Framework (LRF), as beneficiaries of vocational training, to ensure that their livelihoods are not adversely affected.

The physically displaced households were given the following support:

- Compensation amounts for affected houses and other immovable structures matched replacement value. The compensation for these assets was given to the PAH heads based on established replacement values
- A lump sum amount of TK 60,000 was paid to the 15 PAHs towards compensation for houses and trees which was found to be adequate by the 15 PAHs during validation census in August, 2014.
- Further, physically displaced 14 PAHs, informal occupiers of Khas land have received 'permanent' land, from the Government on a long-term leasehold basis (99 years), which will not be expropriated from them throughout this period. Each PAH received 7 decimal of land with registration by the DC office. The remaining one (1) landowner under physically displaced PAH has received 12 decimal of land on similar terms and additionally was paid for his acquired homestead land and pond.
- Moving allowance at Tk 7,000 was also provided to each PAH.
- BCAS conducted focused group discussion and stakeholder consultation meetings with the 15 resettled PAHs in August- September 2014 which revealed that the resettled PAHs are satisfied with the permanent land in the replacement site and the compensation.

- At the resettlement site, there is a provision for providing community and infrastructure facilities such as Mosque (1), and installation of 5 hand tube-wells
- Out of 12 PAHs experiencing partial loss of assets, 1 PAH has lost portions of a pond and pond stair and a portion of the homestead toilet. The rest of the 11 PAHs have lost only trees. All the PAHs have been compensated.

It was observed that the compensation for the main plant, switchyard and access road was completed in 2013. From the 15 Resettlement Houses, 26 people were identified for Livelihood Restoration out of which 12 people have completed trainings and remaining 14 people will complete trainings on the respective dates determined by Training Plan of IDEA (expected to be done by September 2016). The 15 resettled households have been identified as economically impacted and are eligible for seed money. Hence these 15 HHs have received the first installment of seed money upon completion of training programs.

An Entitlement Matrix for Livelihood Restoration Framework has been prepared on the basis of the identified impacts which is applicable to all PAHs for undertaking livelihood restoration measures. It comprises of landowners (includes all 12 of the PAHs subject to partial resettlement – partial resettlers), 53 sharecroppers, 54 Khas land cultivators, and 15 of the Resettlers; along with 138 agricultural labour (not classified as PAHs).

Requirement 37: Community Engagement

The client will engage with Affected Communities, including host communities, through the process of stakeholder engagement described in Performance Standard 1. Decision-making processes related to resettlement and livelihood restoration should include options and alternatives, where applicable.

Observation 37: SBIIPCL engages community and stakeholders through Stakeholder Engagement Plan, Livelihood Restoration Plan and Community Development Plan. The key stakeholders identified are the district government agencies, project affected people, utilities implementing the associated facilities and local community leaders. The Stakeholder Engagement Plan (SEP) comprises of details pertaining to stakeholder analysis, key concerns, expectations, impact and influence, and risk rating of various stakeholder groups. It includes elements of engagement strategy, information disclosure, monitoring (including participatory monitoring where appropriate), stakeholder feedback mechanism, reporting, etc. and guidance on maintaining records of stakeholder consultations. SBIIPCL possesses robust procedure for Community Engagement which includes conducting Stakeholder consultations, adopting Livelihood Restoration and Community Development initiatives.

Requirement 38: Grievance Mechanism

The client will establish a grievance mechanism consistent with Performance Standard 1 as early as possible in the project development phase.

Observation 38: SBIIPCL has a Grievance Redressal Mechanism (GRM) under implementation, which comprises of a Joint Committee for Community Relations (JCCR) responsible for receiving and addressing grievances. SBIIPCL has further strengthened JCCR by ensuring representation of all affected communities including women and resettled households. The GRM Register is being maintained in CDM office for registering the grievance raised by the PAP/ or villagers.

The Community Development Manager of NEPC is required to receive the grievance face to face from the Project affected People (PAP) or neighbouring communities and discuss status of old raised grievance and report all the issues to the SBIIPCL's GM/DGM. The documents on grievance records were available for review. The review of the past records indicate that it covers Environmental issues due to impacts on Air Quality, water logging

and drainage, Noise and Effluent Quality; Social issues such as Compensation, Employment, Livelihood Restoration measures, Trainings, Community Development and Issues within the plant such as Health and Safety and Labour issues. The GRC Register records indicate the resolved and unresolved grievances and have provisions for recording issues addressed by JCCR, CDM, GRM Committee within stipulated timeframe.

Requirement 39: Resettlement and Livelihood Restoration Planning and Implementation

Where involuntary resettlement is unavoidable, either as a result of a negotiated settlement or expropriation, a census will be carried out to collect appropriate socioeconomic baseline data. It will help to identify the persons who will be displaced by the project, determine who will be eligible for compensation and assistance, and discourage ineligible persons, such as opportunistic settlers, from claiming benefits

Observation 39: SBIIPCL is undertaking Livelihood Restoration Initiatives and providing training to the Project Affected Households (PAH) for skill development and employment generation. SBIIPCL has developed a detailed Livelihood Restoration Plan (LRP) in which the entitlements of each PAH / PAP type has been presented in line with the compensation and Livelihood Restoration Framework (LRF) entitlement matrix. The plan caters to Agricultural labour, Landowners, Sharecroppers, Khasland Cultivators and Resettlers.

The LRF comprises of Wage-based and Enterprise-based Livelihood Restoration measures; vocational training measures for 205 out of 376 PAH in Electrical installation and maintenance, Welding, Plumbing, Construction, Crane Operations and Security Guard Services. The training for enhancement of agricultural productivity and livelihood restoration training measures for women such as sewing machine operation,

The status of livelihood restoration training records shows that 205 households have been covered under LRP till May, 2016 covering 151 and 80 agricultural labour. The training for poultry, beef fattening, tailoring, agriculture, computer and business has been provided to 228 participants from November, 2015-February, 2016.

The seed money distribution records show that during the first disbursement period, 67 PAHs were selected for seed money distribution as their respective members have accomplished vocational trainings by December 2015. Among the 67 households, 65 were paid the first installment of seed money which worth Tk 25,000.

SBIIPCL has adequate provision for ensuring implementation of LRP, which includes maintaining records for livelihood restoration training, training completion status and seed distribution. It possesses robust procedure for Community Engagement which includes conducting Stakeholder consultations, adopting Livelihood Restoration and Community Development initiatives

Requirement 40: Physical Displacement

In the case of physical displacement, the client will develop a Resettlement Action Plan that covers, at a minimum, the applicable requirements of this Performance Standard regardless of the number of people affected.

Observation 40: The socio-economic Impact Assessment, Resettlement Action Plan and Livelihood Restoration Framework, list of resettlers, training needs, minutes of meeting proceedings and focus group discussions with the villagers were available for review which indicates Need based Assessment of PAH and effective reporting and monitoring procedures.

Upon review of document on Social Impact Assessment, Resettlement Action Plan and Livelihood Restoration Framework; it was observed that the 15 PAHs included under fully resettled category have been physically displaced from the switchyard area. Of these, 14 were informal occupiers of Khas land. The resettlement and rehabilitation of 27 PAH including 15 PAHs included under fully resettled category and 12 PAHs who have experienced partial loss of homestead land and assets. was carried out by PGCB.

The 15 PAHs which lost their entire homestead land have already been resettled on the same type of land adjacent to the western boundary of the project. The new location is 20 to 25 meters away from their place of original residence.

Requirement 41: Economic Displacement

In the case of projects involving economic displacement only, the client will develop a Livelihood Restoration Plan to compensate affected persons and/or communities and offer other assistance that meets the objectives of this Performance Standard.

Observation 41:

The total amount of compensation to all types of landowners totals Tk. 189,379,314.72. The amount of compensation for different category of PAH is given below:

- The amount of compensation for land for agricultural lease taken by SBIIPCL (Main Plant) was estimated as Tk 32,450,000 (Tk. 29,500/ decimal, total 1,100 decimal) through market analysis of previous land sales, as well as consultations and negotiations between PAHs and LAO office (Habiganj district)
- The compensation to landowners for agricultural land acquired (for the access road) totals Tk 12,390,000 (Tk. 29,500/ decimal, total 420 decimal) based on average value of land (Boro, Amon, Aus) estimated on the basis of the market analysis, as well as consultations and negotiations between PAHs and LAO office
- The compensation to landowners for agricultural land (for the switchyard area) was estimated as Tk 129,742,830. It is based on average value of land estimated on the basis of the market analysis, as well as consultations and negotiations with PAHs, LAO office and PGCB.
- The compensation to landowners for agricultural land (for the gas pipeline) was estimated as Tk 12,921,442 based on average value of land (Boro, Amon, Aus, Chara) estimated after conducting market analysis, field survey, as well as consultations and negotiations with PAHs and LAO office.
- SBIIPCL has devised a procedure for Livelihood Restoration Plan and a mechanism for implementing livelihood restoration initiatives consistent with the needs of PAH, employment and income generation and improvising socio-economic conditions

3.5.2 Private Sector Responsibilities under Government-Managed Resettlement

Requirement 42: *Where land acquisition and resettlement are the responsibility of the government, the client will collaborate with the responsible government agency, to the extent permitted by the agency, to achieve outcomes that are consistent with this Performance Standard.*

Observation 42: SBIIPCL has maintained records for land acquisition from BPDB. Further, Land Lease Agreement between SBIIPCL and BPDB dated 12th May, 2011 is in place.

Bangladesh Power Development Board (BPDB) has, under and through an agreement with the Government of Bangladesh (GoB) obtained land comprising approximately 67.58 acres acquired fully in 2012. It includes an area of

11 acres for SBIIPCL. The land required for construction of lay down area in 14 acres and the access road has been acquired by BPDB and has subsequently been leased to SBIPCL II for a period of 22 years commencing from COD. The private land for the gas pipeline has been acquired by Jalalabad Gas Transmission & Distribution System Limited (JGTDSL) and for the switchyard and T-line by PGCB.

During validation census in August, 2014 it was found that the compensation for all categories of PAHs has been settled. Compensation were made for the land acquired and requisitioned and other categories of PAHs as per the Government plan for setting up the SBIIPCL Power Plant, Gas Pipeline, Access road and the Switchyard.

3.5.3 Status of Compliance to PS-5

The plant is compliant to aspects under PS-5. The compliance status against IFC PS5 observed during the assessment process is as follows:

1. A lump sum amount of TK 60,000 was paid to the 15 PAHs under physically displaced category towards compensation for houses and trees which was found to be adequate by the 15 PAHs during validation census in August, 2014.
2. Permanent land from the Government on a long-term leasehold basis (99 years) has been provided to 14 khas cultivators under physically displaced category.. The remaining one (1) landowner under physically displaced PAH has received 12 decimal of land on similar terms and additionally was paid for his acquired homestead land and pond.
3. SBIIPCL engages community and stakeholders through Stakeholder Engagement Plan, Livelihood Restoration Plan and Community Development Plan
4. SBIIPCL has a Grievance Redressal Mechanism (GRM) under implementation, which comprises of a Joint Committee for Community Relations (JCCR) responsible for receiving and addressing grievances. It comprises of representation of all affected communities including women and resettled households.
5. Livelihood Restoration Framework consistent with the needs of PAH, employment and income generation and improvising socio-economic conditions
6. The 15 PAHs which lost their entire homestead land have already been resettled on the same type of land adjacent to the western boundary of the project
7. Compensation were made for the land acquired and requisitioned and other categories of PAHs as per the Government plan for setting up the SBIIPCL Power Plant, Gas Pipeline, Access road and the Switchyard. The records for completion audit of the resettlement/ livelihood restoration identifying remaining gaps and corresponding corrective actions are not available
8. The cost incurred for training programs and budget plan for Community Development Initiatives and Livelihood Restoration Plan are not available.

3.5.4 Recommendations

- None

3.5.5 Material Liability

The proposed project does not involve any materiality issues of significance under PS-5 as SBIIPCL is undertaking significant community development measures and records and documents for its effective implementation are available.

3.6 Performance Standard (PS) 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

3.6.1 Protection and Conservation of Biodiversity

Requirement 43: Critical Habitat: *Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically endangered and/or endangered 11 species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes*

Observation 43: Reportedly, the potential risk of the SBPCL II Power Plant is bird collisions from transmission lines (power cables) which can have significant impact on Baer's Pochard (*Aythya baeri*), an endangered species as per IUCN Red List of Threatened Species; in Hail Haor and Hakaluki Haor, located approximately 20 km south and 30 km east of the Plant respectively. The breeding bird survey and management plan as per ESMMP to combat risk of bird collisions with 70 m section of transmission line and to ensure nil impact on migratory birds was not available for review.

- It was observed that a 2-day bird survey has been undertaken by SBIIPCL in December, 2015 by engaging a third party.
- 43 species of birds were recorded in the study area
- The findings of the study revealed that there is no intervention of the power plant and T-line (70 m) on the migratory birds in the project area.
- Also, there is no T-line of SBIIPCL crossing across the Hakaluki haor therefore there was no impact of the T line of SBIIPCL on migratory birds in the Hakaluki haor area.
- The Important Bird Areas (IBA) and their flyway are far away from the project site, approximately 45 km away from the project site therefore, movements or flyway and flying mode of migratory birds will not be affected by plant operations.
- There is no record of dead birds and their carcasses according to the observation of locals. Furthermore, the T-line is only 70m long and after commissioning of this line there were no carcasses of migratory birds found
- However, an Annual Bird monitoring has been recommended in the Study to comprehensively assess the potential impact on migratory bird habitat, if any throughout the lifecycle of the project by monitoring species diversity, abundance and monitoring dead bird and their carcasses

Requirement 44: Natural Habitat: *Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition. In areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible. Appropriate actions include avoiding impacts on biodiversity through the identification and protection of set-asides*

Observation 44: SBIIPCL has prepared a Greenbelt Development Plan but details on Status Report of Greenbelt Development were not available for review. Further, the Green Belt Development Plan only provides location details, schematic layout and details of species for plantation in Greenbelt however; it lacks the details of width of the Greenbelt and consideration of Pollution attenuation in the Greenbelt designing.

3.6.2 Management of Ecosystem Services

Requirement 45: *Where a project is likely to adversely impact ecosystem services, as determined by the risks and impacts identification process, the client will conduct a systematic review to identify priority ecosystem services. Priority ecosystem services are two-fold: (i) those services on which project operations are most likely to have an impact and, therefore, which result in adverse impacts to Affected Communities; and/or (ii) those services on which the project is directly dependent for its operations (e.g., water). When Affected Communities are likely to be impacted, they should participate in the determination of priority ecosystem services in accordance with the stakeholder engagement process as defined in Performance Standard 1.*

Observation 45: There is one endangered bird species as per IUCN Red List of Threatened Species at around 20 km from the plant and four (4) near threatened fishes in Kushiya River.

A fisheries survey conducted during post-monsoon season from 18th -26th October 2011 (to determine the aquatic diversity and fish habitats in the Kushiya River reveals that out of 32 identified species, four species were Near Threatened (NT). The temperature monitoring records are being maintained at point of discharge, upstream and downstream of Kushiya River to assess change in temperature regime.

The thermal discharge in Kushiya River can have significant impacts on Fishing therefore SBIIPCL was required to conduct Fish Habitat Survey as a part of its monitoring program provided in ESIA Report. SBIIPCL has therefore conducted an Aquatic Ecological Monitoring Survey in November 2015 to assess the limnological and fisheries conditions for the impact zone of SBIIPCL project situated on the bank of the Kushiya River in order to compare these findings with those of the baseline study for the same project.

It was observed from the study findings that Kushiya River possesses good water quality and rich biodiversity like the baseline study. This study also found almost similar fisheries conditions (population, market and fishers' livelihoods) like the baseline study except the higher price of fish due to normal market trend. Therefore the study concluded that the SBIIPCL project has not yet posed any considerable impact on the water quality, aquatic biodiversity and fisheries conditions.

The terrestrial and aquatic ecological survey conducted in August, 2015 reveals presence of 52 species of birds, 18 species of reptiles, 7 species of wild animals and 7 species of domestic animals. The study concluded that there is no reduction of either floral or faunal species and therefore SBIIPCL plant has not yet posed any considerable impacts on the terrestrial biodiversity. Further, monitoring records for banks of Kushiya River to assess erosion of banks is being carried out as per Climate Change Adaptation Procedures as per ESMP in ESIA Report were not made available for review.

3.6.3 Status of Compliance to PS-6

The following non-compliances were observed against IFC PS-6 during the assessment process:

1. The Green Belt Development Plan lacks the details of width of the Greenbelt and consideration of Pollution attenuation in the Greenbelt designing.

3.6.4 Recommendations

2. The Greenbelt Development Plan needs to be updated with inclusion of details such as width and pollution attenuation factor of the species being planted
3. Greenbelt Development needs to be carried out and records needs to be maintained

3.6.5 Material Liability

The project does not involve any materiality issues of significance under PS-6 as the operations of the project will not lead to significant impacts on biodiversity and loss of species. The Management Plan and procedures such as Greenbelt Development Plan, Invasive Alien Species Management Plan are in place.

3.7 Performance Standard (PS) -7: Indigenous People

The client will identify, through an environmental and social risks and impacts assessment process, all communities of Indigenous Peoples within the project area of influence who may be affected by the project, as well as the nature and degree of the expected direct and indirect economic, social, cultural (including cultural heritage), and environmental impacts on them.

Applicability to the Project

The neighbouring area near project site do not involve inhabitation by Indigenous ethnic minorities therefore, PS-7 is not applicable to this project. Further, there are no indigenous people or ethnic minorities living or owning/renting or leasing property on any of the land acquired for the plant.

3.8 Performance Standard (PS) - 8: Cultural Heritage

Where a project may significantly impact on critical cultural heritage that is essential to the identity and/or cultural, ceremonial, or spiritual aspects of Indigenous Peoples lives, priority will be given to the avoidance of such impacts. Where significant project impacts on critical cultural heritage are unavoidable, the client will obtain the FPIC of the Affected Communities of Indigenous Peoples.

Applicability to the Project

The neighbouring area adjacent to the project site do not involve any archaeological monument, structures which could pose a threat to Cultural Heritage. Also, no cultural sites have been affected due to the process of land acquisition or any project construction activities therefore, PS-8 is not applicable to the project.

The present section delineates the list of actions required to be undertaken by the SBIIPCL management to ensure closure of the gaps as identified in Section 3.0 of the report. The Corrective Action Plan is provided below with timelines, responsibilities and specific action items.

The gaps are categorised as red, orange and yellow flag issues based on the severity of impact on the EHS and Social aspect:

Flags	Remarks
Red Flag Issues	These are observations which pose high impact on the environment, health, safety and social aspects and may have legal implications.
Orange Flag Issues	These are observations which pose moderate impact on the environment, health, safety and social aspects.
Yellow Flag Issues	These are observations which pose low or least impact on the environment, health, safety and social aspects.

Table 3-8: Summary of Findings and Recommendations

S. No.	Applicable Performance Standard	Issue Identified	Summary of Issues	Flag	Proposed Action Plan	Budget Resource	& KPI	Responsibility	Timeline (from date of finalization of this report)
1.	PS-2	HR Procedures	<ul style="list-style-type: none"> The HR Procedures do not provide provisions for overtime compensation of 2 times basic salary, limiting overtime upto 60 hours/week and informing workers beforehand. There are no labour unions at present on site however, there are no procedures to handle issues of worker unions in future The elements of Forced and trafficked Labour are not defined in HR procedures 	Yellow	<ul style="list-style-type: none"> The work timings and overtime compensation benefits needs to be consistent with Labour Laws of Bangladesh. Efforts needs to be made to maintain Guidance Manual/SOP on collective bargaining and formation of lawful workers unions w.r.t applicable national laws and legislations The element for Forced Labour needs to be covered in the HR Procedure Manual for verifying the procedure for checking employment of traffic persons and verification records needs to be maintained by SBIIPCL management 	To be implemented within existing resources. No additional budget required.	Framing and implementing Site specific HR Policy and procedures	Community Development Manager, SBIIPCL and EHS Manager, O&M Contractor	Within one (1) month
2.	PS-2	Retrenchment Plan	<ul style="list-style-type: none"> The HR procedures of SBIIPCL and NEPC lack the provisions for collective dismissals 	Yellow	<ul style="list-style-type: none"> Retrenchment procedures should be formulated as part of HR policies of both SBIIPCL and NEPC to ensure transparency for any unforeseen situations involving collective dismissals 	To be implemented within existing resources. No additional budget required.	Labour records	Community Development Manager, SBIIPCL and EHS Manager, O&M Contractor	Within one (1) month
3.	PS-2	Work Timings and Overtime compensation benefits	<ul style="list-style-type: none"> The work timings are not complying to Labour Laws of Bangladesh according to which an employee/labour is required to work during 8 am to 8 pm in the day shift and 8pm to 8am during night shift. The overtime compensation has been restricted to only 1.5 times the normal basic salary and 2 times of the employees normal hourly basic salary for each hour worked during weekly holidays and public holidays. 	Orange	<ul style="list-style-type: none"> The work timings and overtime compensation benefits needs to be consistent with Labour Laws of Bangladesh. The operations should involve working in three shifts and the labour work timings needs to be restricted to only 8 hours a day The HR Procedures of NEPC needs to include provisions for overtime compensation of 2 times basic salary, limiting overtime upto 2 hours and informing workers beforehand and provision of giving 30 minutes break to workers 	To be implemented within existing resources. No additional budget required.	Report on labour engaged in 3 shifts, Salary Slips, and Overtime Compensation records	EHS Manager, O&M Contractor	Within one (1) month

S. No.	Applicable Performance Standard	Issue Identified	Summary of Issues	Flag	Proposed Action Plan	Budget Resource	& KPI	Responsibility	Timeline (from date of finalization of this report)
					involved in hazardous activity after every 2 hours				
4.	PS-3	Hazardous Waste Management	<ul style="list-style-type: none"> Reportedly, there are no display of warning signages in the acid and alkali storage area and arrangements for spill kits Reportedly, there are no arrangements for secondary containment for capturing any spillage from the hazardous waste storage area. There are a number of openings provided in this area, and any spillage from this area can directly enter storm water drainage and eventually into Kushiyara river. 		<ul style="list-style-type: none"> Display of warning signages in the acid and alkali storage area and arrangements for spill kits at storage area needs to be made to control any accidental leakage during loading and unloading of acid and alkali tanks Arrangements for secondary containment to prevent mixing of hazardous waste with storm water needs to be implemented 	To be implemented within existing resources. Budget: USD 80,000 – 90,000	Display of warning signages in the acid and alkali storage area and arrangement of spill kits	EHS Manager-O&M Contractor	Within two (2) weeks
5.	PS-4	Traffic Management	<ul style="list-style-type: none"> The records for inventory of vehicles and Fitness Certificate records are not maintained for compliance w.r.t. Schedule 6 (Standards for emissions from motor vehicles) of the Environmental Conservation Rules, 1997 of GoB 		<ul style="list-style-type: none"> Records needs to be maintained for an inventory of vehicles in operation and obtain certificate of fitness for the same The vehicles deployed during operations should have driving license and PUC certificate and records should be properly maintained 	To be implemented within existing resources. No additional budget required.	No fatalities near plant approach road; Accident Monitoring records	Security In-Charge, O&M Contractor	Within one (1) month
6.	PS-6	Impacts on Natural Habitat	<ul style="list-style-type: none"> Details of width and records of Greenbelt development are not being maintained 		<ul style="list-style-type: none"> The Greenbelt Development Plan needs to be updated with inclusion of details such as width and pollution attenuation factor of the species being planted Greenbelt Development needs to be carried out and records needs to be maintained 	To be implemented within existing resources. No additional budget required.	Progress Reports on Greenbelt Development Plan	Assistant Manager-EHS, SBIPCL and EHS Manager-O&M Contractor	Within one (1) month

Environment and Social Due Diligence Report as per IFC Sustainability Framework

**SUMMIT MEGHNAGHAT POWER COMPANY LIMITED, at
Sonargaon, sub-district of Narayanganj, BANGLADESH**

April 2016

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Abbreviations

SMPCL	Summit Meghnaghat Power Company Limited
HR	Human Resources
GRC	Grievance Redressal Committee
DGM	Deputy General Manager
PPE	Personal Protective Equipment
HIRA	Hazards Identification and Risk Assessment
CNEEC	China National Electric Engineering Company Ltd.
GIIP	Good International Industry Practice
PAP	Project Affected People
IC	Incident Commander
HSE	Health, Safety and Environment
DEG	Deutsche Entwicklungs und Investitionsgesellschaft
ESDD	Environmental and Social Due Diligence
IFC	International Finance Corporation
PS	Performance Standards
ESMS	Environmental and Social Management System
ESAP	Environmental and Social management Plan
CCPP	Combined Cycle Power Plant
HSD	High Speed Diesel
NG	Natural gas
HRSG	Heat Recovery Steam Generators
EC	Environmental Clearance
EIA	Environmental Impact Assessment
DOE	Department of Environment
EMP	Environmental Management Plan

Executive Summary

Summit Group of Companies (hereafter referred to as “Summit” or “Client”), a private sector conglomerate of Bangladesh, comprising of a chain of synergic business units in the power, shipping and communications sector. Summit Corporation Limited (SCL), one of the core companies of Summit Group, currently produces around 1,260MW, which is around 13% of total power generation capacity of Bangladesh. With its expansion plans, SCL intends to hold 20% of the country’s generation capacity. As power generation is a capital-intensive sector, SCL has planned to approach international market for expanding its equity base. As part of this endeavor, SCL has signed an Appraisal Letter with the International Finance Corporation (hereinafter referred to as ‘IFC’) for investment in the company to be made by latter and its co-investors subject to satisfactory outcome of a due diligence process.

As per the requirements of IFC, due diligence on Environmental & Social aspects of the company is required before making any decision on investment/financing in any company. SCL and IFC has therefore, engaged AECOM India Private Limited (hereinafter referred to as ‘AECOM’) to assess the alignment of Summit’s environment, health, safety and social related policies, plans and procedures with respect to the reference framework (as defined below) through review and assessment of holding company and individual assets.

Since the project has been already obtained financial assistance DEG in the year 2013 and several environmental social assessment such as Environmental and Social Impact Assessment (ESIA), environment and social due diligence (2013) annual monitoring compliance reports (for year 2014, 2015 and 2016), have been previously undertaken, Summit has engaged AECOM to conduct a desktop based Environment and Social Due Diligence of its operating 335 MW Dual Fuel Combined Cycle Power Plant at Meghnaghat, Sonargaon sub district of Narayanganj, Bangladesh. The Plant has been developed through one of Summit’s subsidiary company, Summit Meghnaghat Power Company Limited (hereafter referred to as ‘SMPCL’). Summit Corporation Limited (SCL) has 57.65% shareholding in SMPCL

The desktop based due diligence has been undertaken against the requirements of the following reference framework:

- Bangladesh Environmental, Health, Safety and Social regulations related to all aspects that are covered in the IFC Performance Standards, 2012;
- IFC Performance Standards 1 to 8 dated Jan 2012;
- The IFC General Environmental, Health and Safety (“EHS”) Guidelines, dated 2007;
- The IFC Sector EHS Guidelines for Thermal Power Plants dated 2008;
- Power Sector EHS Guidelines for Electric Power Transmission and Distribution dated 2007 (except Section 3.2 and 3.3)

The Project is a dual fuel (natural gas / liquid fuel oil) fired combined cycle power plant, with capacity of 335 MW on natural gas and 305 MW on High Speed Diesel (HSD). The simple cycle operations commenced in May 2014; while the combined cycle operations started in June 2015 (COD: 01st June 2015). The Project has a lifecycle of 22 years.

The plant comprises of two (2) gas turbines capable of operating on natural gas and/or HSD, two (2) Heat Recovery Steam Generators (HRSG) connected to a common steam turbine of condensing type for indoor installation, condensate and feed water system, cooling water system and auxiliary equipment. The gas turbine supplier for the project is General Electric, steam turbine is procured from Harbin and HRSGs are procured from Hangzhou Boiler Group Co. Ltd.

SMPCL has signed a Gas Supply Agreement (GSA) with M/s Titas Gas Transmission and Distribution Company Limited, a Bangladesh Government owned company. The gas will be delivered through existing gas pipeline just outside the power plant. However, as reported, the plant is currently operating on high speed diesel (HSD) due to unavailability of gas.

SMPCL has entered into an operation and maintenance contract for the project with KEPCO Plant Service & Engineering Company Limited (hereafter referred to as 'KEPCO'), a Korean Company. KEPCO-KPS is fully responsible for operation and maintenance of the power plant, including implementation of environmental and social management system within the project. SMPCL has also deputed its own O&M team to monitor and manage the project operations including E&S management, security, house-keeping and grievance issues.

The project was accorded with Environmental Clearance (EC) in August 2013. SMPCL had engaged M/ s SGS India Private limited to undertake the Environment and Social Impact Assessment (ESIA) of the project as per the requirements of Department of Environment (DOE), Bangladesh and of International Finance Corporation (IFC). In compliance with the requirements of the EC, SMPCL conducts periodic environmental monitoring (air quality, water quality, noise quality) to assess the effectiveness of the environment control measures within its Plant premises and submits quarterly environmental monitoring reports to the DoE.

SMPCL has developed a set of procedures and plans pertaining to EHS and social aspects, which are reviewed monthly by the formulated EHS committee. SMPCL has undertaken Hazard Identification and Risk Assessment (HIRA) for health and safety risks as well as Aspect Identification and Impact Evaluation (AIIE) for environment risks considering the operational aspects. Risk mitigation and reduction measures are documented and practiced based on the EHS Management Plan guidelines.

SMPCL has developed social related management procedures such as Grievance redressal mechanism and socio-economic environment protection and Stakeholder engagement plan. The procedures are implemented through the O&M contractor, M/S KEPCO, who has a contractual obligation to adhere to these requirements.

The power plant falls under "red category" according to the Bangladesh Environment Conservation Rules 1997 (GoB, 1997). In accordance to the screening criteria of the IFC, the project can be categorized Project as **Category B** based on the following:

- The Project is located on a land parcel which was acquired as part of a larger developed area known as Meghnaghat Power Sites Area (MPSA). As per the latest Annual monitoring report (2016), there are no issues pertaining to land acquisition;
- The total land required for the project has already been acquired approximately 15 years back, hence no physical displacement or relocation of community is envisaged in near future.
- The impacts on environmental components i.e. air-shed, receiving water body and ecology, as assessed through ESIA study and other related information are considered as site specific and are mostly reversible and can be addressed through mitigation measures;
- Evacuation of power does not require installation of long transmission line as the switchyard is adjacent to the site;
- Availability of gas supply in close proximity reduces the need for large infrastructure for pipeline;
- A floating type jetty has been constructed for transfer of fuel, which limits any potential impact associated with construction of a permanent jetty;

- A series of mitigation measures related to environment and social aspects have already been implemented by the project after recommendations from several assessments such as ESIA, ESDD, annual monitoring status assessments carried out over the years since 2013.

Key observations and findings (PS wise) as part of the Environmental and Social Due Diligence conducted at SMPCL Power Plant are presented below:

PS-1: Assessment and Management of Social & Environmental Risks and Impacts

It was noted during the document review that though SMPCL has not maintained a consolidated EHSS Manual (Environment, Health, Safety and Social), a series of procedures on EHS aspects have been formulated and maintained by the SMPCL.

SMPCL has conducted an ESIA study through M/s SGS India Private Limited. The project was accorded with Environmental Clearance by Department of Environment in year 2013, with validity up to 30-Mar-2016. SMPCL has also undertaken Hazard Identification and Risk Assessment (HIRA) for health and safety risks due to system failure as well as Aspect Identification and Impact Evaluation (AIIE) for environment risk.

Overall compliance with PS1 is adequate, however, there is no evidence exhibiting that the company reviews its EHS policy on bi-annual basis, as is committed.

PS-2: Labour and Working Conditions

SMPCL has developed an "Employment Policy" which is applicable to all its probationary and full time employees. However, it is not applicable to the contract labour and security guards hired by SMPCL. The Policy covers general terms and conditions of services including appointment procedure, probation period, confirmation of service, promotion, retirement, employee's code of conduct, pay scale, other financial benefits, transfer and change of designation. SMPCL has also developed documents pertaining to job categorization, leave policy, bonus policy, office timings, policy on non-employment of adolescent & child at work, anti-discrimination policy, anti-harassment & abuse at work policy, performance appraisal policy, anti-bribery & corruption policy, whistle blower policy.

As part of the admin and planning procedures, KEPCO, in consultation with SMPCL, has developed and maintained an HR policy in the form of "Employee Handbook", which is applicable to the O&M staff present at project site.

Overall compliance with PS 2 is adequate, however, following non-compliances against IFC PS 2 have been observed during the assessment process:

- **Human Resource Management Policy and Procedure:** SMPCL has developed an "Employment Policy" which is applicable to all its probationary and full time employees. However, it is not applicable to the contract labour and security guards hired by SMPCL.
- **Wages and Overtime:** As per the wage register, overtime paid to the worker noted to be 1.5 times of the basic pay which is against the requirement of Bangladesh Labour Act, 2006 which is twice the ordinary rate of basic wage and dearness allowance;
- **Workers' Organization:** SMPCL's HR policy does not mention of Company's intention of no objection on formation of worker's organization.
- **Retrenchment policy:** SMPCL's HR policy does not talk about retrenchment.
- **Occupational Health and Safety:** HIRA sheet and latest Annual Monitoring Report, Feb 2016, moving/rotating parts of the equipment at fire water pump house, acid storage etc. have no machine guarding around them, hence posing serious risk of injury;. No documentary evidence was furnished to exhibit that the gap identified had been closed.

PS-3: Resource Efficiency and Pollution Prevention:

SMPCL has developed EHS procedures to improve their environmental performance in terms of reducing their consumption of energy, water, as well as other resources and material inputs. Necessary design controls have been considered in the Plant components. The plant is designed for dual fuel, combined cycle operations, which conserves energy.

SMPCL undertakes regular environmental monitoring for the project at onsite and offsite locations for parameters such as ambient air quality (onsite and offsite), ambient noise levels (on monthly basis for onsite and offsite locations), wastewater discharge quality (monthly basis), river water and groundwater quality (quarterly basis). SMPCL has installed a Continuous Emission Monitoring System (CEMS) for monitoring of stack emissions NOx, SO2, CO2 and particulate matters during operations.

Overall compliance with PS 3 is adequate, however, following non-compliances against IFC PS 3 have been observed during the assessment process:

- **Pollution Prevention:** The results of the quarterly laboratory analysis of water samples taken from river (Jan 2015) and groundwater showed higher iron concentration levels than the prescribed IFC and DOE standards. This can be attributed to the significantly high concentrations of naturally occurring ferrous ions (iron) in groundwater aquifers in rural areas of Bangladesh (including Narayanganj district where the plant is located).
- **Waste Management:** Agreement for the biomedical handling and disposal between SMPCL and M/s Prism Bangladesh Foundation has been noted to be expired on 9th March 2016.

PS-4: Community Health Safety and Security:

SMCL had considered safety risk to nearby community while designing and commissioning of the power plant.

SMPCL has also developed Waste Management procedure and caustic, acid, chlorine handling, storage and disposal procedure which details the procedure to storage, handling and disposal of hazardous material to minimize community exposure.

SMPCL carried out a plume modelling using MIKE 3 Flexible Mesh (FM) to assess the incremental rise in temperature due to the outfall. The incremental rise in temperature was found to be within the limits prescribed by the Department of Environment, Bangladesh.

None of the activities carried out at Plant premises has potential for community exposure to water borne, water based and communicable diseases.

An Emergency Management Procedure has been developed by SMPCL which details the procedure of evacuation during any emergency situations like Fire & Explosion, Chlorine Release, Failure of structures, etc. Evacuation to be carried out with the help of Local project affected people (PAP) committee, police department and fire department. Reportedly, chlorine is being stored in chlorine tonners.

SMPCL has formulated Security Policy and Procedure which details out security arrangements at the Plant site and prescribes the process to be followed in case of any emergency or unlawful activities by the security personnel.

- With respect to observations noted during the document review, the project is compliant with PS-4 and no issues pertaining to Community health and safety have been identified.

PS-5: Land Acquisition and Involuntary Resettlement:

As understood from ESDD conducted in year 2013, land acquisition for the Project was undertaken in the year 1995 -1999. The rate at which the land was acquired was approximately was reportedly lesser than the replacement value.

The registration fee on any land procured by land user was also waived off. The land when transferred to SMPCL was devoid of any habitation or significant vegetation. Therefore, this aspect of PS does not attract any monitoring requirements.

- With respect to observations noted during the document review, the project is compliant with PS-5 and no issues pertaining to land have been identified.

PS-6: Biodiversity Conservation and Sustainable Management of Living Natural Resources:

An assessment of ecological impact has been undertaken as part of ESIA study. The area is devoid of any significant vegetation or faunal population.

The thermal plume dispersion modelling exercise suggests that there will not be any loss of habitat due to discharge of cooling water. The outlet temperature of cooling water is measured and recorded on regular basis by SMPCL and is observed to be within prescribed limits.

In order to assess the loss in fish catch in the Meghna River due to cooling water discharge into the river, SMPCL has identified agencies to carry out the survey and intends to complete the exercise by May 2016. The project is not located within legally protected areas.

- With respect to observations noted during the document review, the project is compliant with PS-6 and no issues pertaining to Biodiversity Conservation and Sustainable Management of Living Natural Resources have been identified and hence PS-6 requirements are not triggered.

PS-7: Indigenous People:

The population of indigenous communities in Narayanganj district is limited. Owing to the small scale of plant operations, no direct social risks to the community at large, including the indigenous community if any, were identified. PS 7 does not get triggered.

PS-8: Cultural Heritage:

There are no sites of cultural or religious importance at site or its immediate vicinity. Inference may be made from the recent past construction/ excavation activities carried out for power plants around the area, where no such cases appeared. It may be concluded that there is no possibility of chance find. Therefore, Performance Standard 8 does not get triggered in this case.

2.0 Summit Meghnaghat Power Company Limited

2.1 Background

Summit Group has developed a 335 MW Dual Fuel Combined Cycle Power Plant at Sonargaon sub-district of Narayanganj (hereafter referred to as the 'Project') through Summit Meghnaghat Power Company Limited (hereafter referred to as 'SMPCL').

The Project is a dual fuel (natural gas / liquid fuel oil) fired combined cycle power plant, with capacity of 335 MW on natural gas and 305 MW on High Speed Diesel (HSD). The simple cycle operations were commenced in May 2014; commercial operation date (COD: 29th May 2014) while the combined cycle operations started in June 2015 (COD: 01st June 2015). The Project has a lifecycle of 22 years.

SMPCL has obtained financial assistance from Deutsche Entwicklungs- und Investitionsgesellschaft (DEG) in 2013. The financial involvement preceded with an Environmental and Social Due Diligence (ESDD) of the Project as per the requirements of International Finance Corporation (IFC) Performance Standards (PS), other related EHS guidelines, national regulatory framework as mentioned in Reference Framework section below. AECOM India was engaged by DEG as lenders' advisor (LA) for this ESDD undertaken in Jan-2013. **An Environment and Social Impact Assessment (ESIA)** was also undertaken in June, 2013 to assess the environmental and social impact associated with development of the power plant and recommend associated mitigation measures and management plans.

As per the requirements of IFC, due diligence on Environmental & Social aspects of the Company is required before making any decision on investment/financing in any company. SCL and IFC has therefore, engaged AECOM India Private Limited (hereinafter referred to as 'AECOM') to assess the alignment of the Company's environment, health, safety and social management systems (ESMS) with respect to the stipulated reference framework through review and assessment of holding company and individual assets.

In March 2014, during construction phase of the project, DEG engaged AECOM India to carry out Annual Environment and Social Monitoring for verification of compliance and to check the implementation of Environment and Social Action Plan and status of monitoring

In December 2014, during operation phase, SMPCL engaged AECOM India to conduct Annual Environment and Social Monitoring of the project as per the requirements of IFC Performance Standards and ADB Safeguard Policy Statement (SPS) and to verify the status of completion of Corrective Action Plans proposed during previous assessments.

Since the project has been already obtained financial assistance DEG and several environmental social assessment have been previously undertaken, Summit has engaged AECOM to conduct a desktop based Environment and Social Due Diligence of its operating 335 MW Dual Fuel Combined Cycle Power Plant at Sonargaon sub district of Narayanganj plant.

2.2 Project Location

The Project is located about 25km south-east of Dhaka. The Dhaka-Chittagong Highway traverses across the area, about 3 kms in the eastern direction. The project site is about 16km road distance from Narayanganj river port. The site for the 335MW dual fuel SMPCL power plant is adjacent to the existing Phase I of 450MW combined cycle power plant of Meghnaghat Power Ltd. The site is accessible through the Dhaka-Chittagong highway close to the Meghna River Bridge and slightly southwest downstream of the project site, the Meghna River converges with the Dhaleswari (Kaliganga) and the Sitalakhya Rivers.

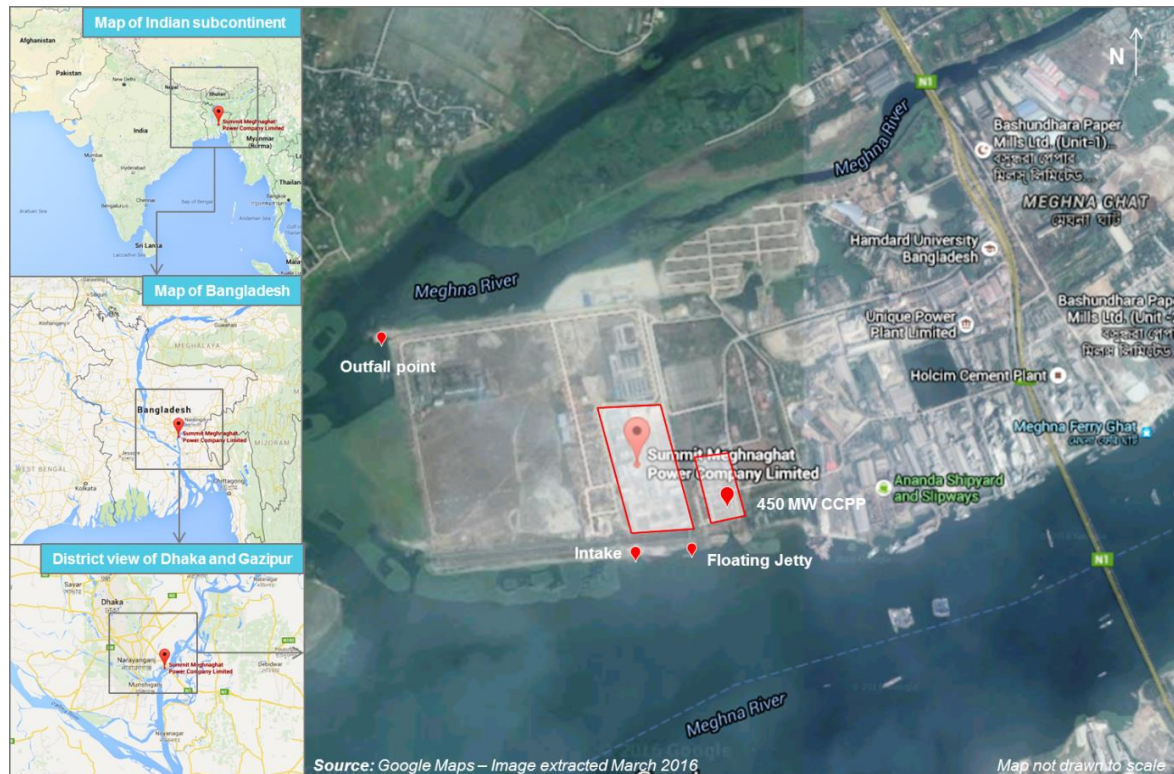


Figure 2-1: Indicative location map of the SMPCL Power Plant

The Project is spread across an area of 25 acres of land which is part of a larger developed area known as Meghnaghat Power Sites Area (MPSA). The land for the project was acquired by Bangladesh Power Development Board (BPDB) in the year 1999 and developed this area for siting of power generation plants. Reportedly, there are no outstanding issues related to land acquisition.

Prior to site development, the MPSA was utilized for the seasonal production of rice, wheat, pulses, oilseeds, eggplants, tomatoes, sweet potatoes, and watermelon.

As per the socio-economic study carried out as part of the ESIA process, there are seven villages near the plant location which are located at a distance of approximately 2.5 km from the Power Plant. In the east of the project, there are several operational cement plants.

2.3 Current Status

Currently, the project is commercially operational in combined cycle from June 2015 onwards. SMPCL has entered into an operation and maintenance contract for the project with KEPCO Plant Service & Engineering Company

Limited (hereafter referred to as 'KEPCO'), a Korean Company. KEPCO-KPS is fully responsible for operation and maintenance of the power plant, including implementation of environmental and social management system within the project. SMPCL has also deputed its own O&M team to monitor and manage the project operations including E&S management, security, house-keeping and grievance issues.

As noted, the company has signed a Gas Supply Agreement (GSA) with M/s Titas Gas Transmission and Distribution Company Limited, a Bangladesh Government owned company. However, as reported, the plant is currently operating on high speed diesel (HSD) due to unavailability of gas.

When available, the gas will be delivered through existing gas pipeline just outside the power plant.

The project had a gross generation of 641718 MWh during the period starting from January 2015 up till February 2016. Simple cycle operations (Jan 2015- May 2015) yielded 137,514 MWh and generation during combined cycle operations (June 2015 – Feb 2016) was 504204 MWh. Out of the gross generation, about 21844 MWh was utilized as auxiliary consumption, thus resulting in net generation of 482359 MWh. Months of Dec and Jan may be considered as lean time for power generation when there was no plant power generation in year 2015-16. Feb 2016 also witnessed less power generation (about 40 % generated) as compared to the other months.

2.4 Related Agreements

The project has obtained the following approvals:

Environmental Clearance: The project was accorded with Environmental Clearance (EC) in August 2013.

Outfall structure and Oil Jetty: The project has obtained license from Bangladesh Inland Water transport Authority for setting up the outfall structure and floating jetty (Pontoon based) on the Meghna river.

The project had already entered in to the following agreements which include:

- SMPCL has signed an agreement with Government of Bangladesh for the Project. The power plant capacity with gas was estimated 335-MW and with HFO 305-MW. However, during assessment was informed that the HFO shall be replaced by Diesel as fuel.
- A Power Purchase Agreement (PPA) has been signed with Bangladesh Power Development Board (BPDB) - an off-taker of generated electricity,
- A Gas Supply Agreement (GSA) with has been signed Titas Gas Transmission and Distribution Company Ltd.
- An Implementation Agreement (IA) with Bangladesh Government and Power Grid Company Limited,
- A Fuel Supply Agreement (FSA) has been signed with Bangladesh Petroleum Corporation and
- Land Lease Agreement (LLA) with BPDB has already been signed.
- Agreement with DoE approved vendor for disposal of bio medical waste
- Agreement with DOE-authorised hazardous waste collection and disposal agency, M/S Tania Enterprise dated 11th March, 2014

2.5 Organisation Structure

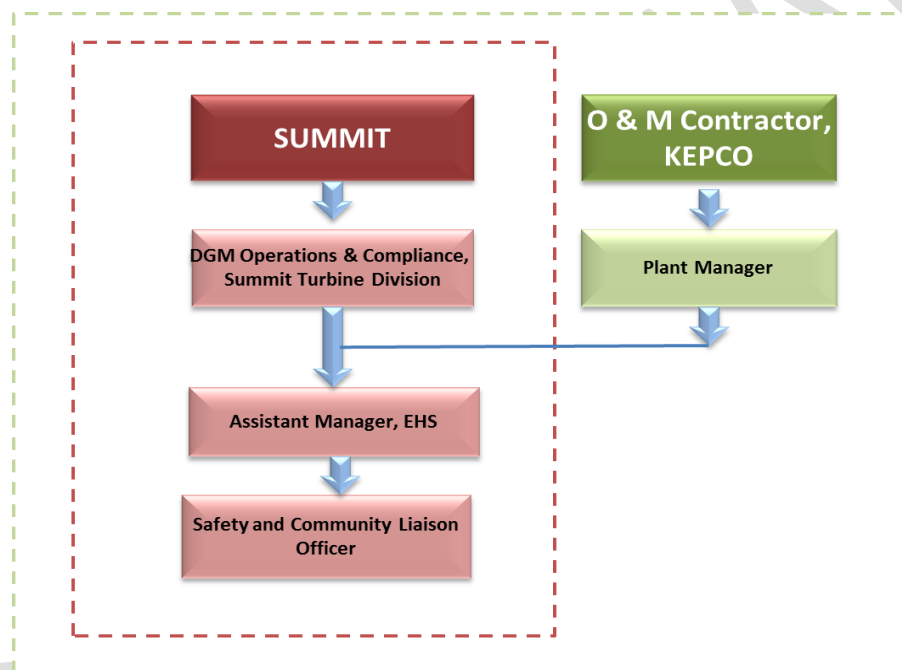
Currently, the project's Operations and Maintenance (O&M) is taken care of by KEPCO, who has deployed about 62 employees at project site under five departments viz. Operation, Mechanical, Electrical, Instrumentation and Control

(I&C) and Administration and Planning (A&P). There are four (4) temporary employees engaged by KEPCO - two housekeeping staff and two engineer trainees.

SMPCL has also deputed seven (7) staff at the plant, including one (1) DGM- Operations and Compliance, one (1)- Assistant Manager- EHS and one (1) Safety & Community Liaison Officer. KEPCO's Plant Manager who is overall responsible for all plant operations and maintenance, reports to the SMPCL's DGM- Operations and Compliance. From the documents review, it appears that the EHS organisation structure for implementation of EHS procedures and plans at the project site is adequate.

The current organizational structure of KEPCO at the plant is provided in Figure 2-2 below.

Figure 2-2: Organisation Structure



2.6 Facility Details

2.6.1 Process Description

The plant comprises of two (2) gas turbines capable of operating on natural gas and/or HSD, two (2) Heat Recovery Steam Generators (HRSG) connected to a common steam turbine of condensing type for indoor installation, condensate and feed water system, cooling water system and auxiliary equipment. The gas turbine supplier for the project is General Electric, steam turbine is procured from Harbin and HRSGs are procured from Hangzhou Boiler Group Co. Ltd.

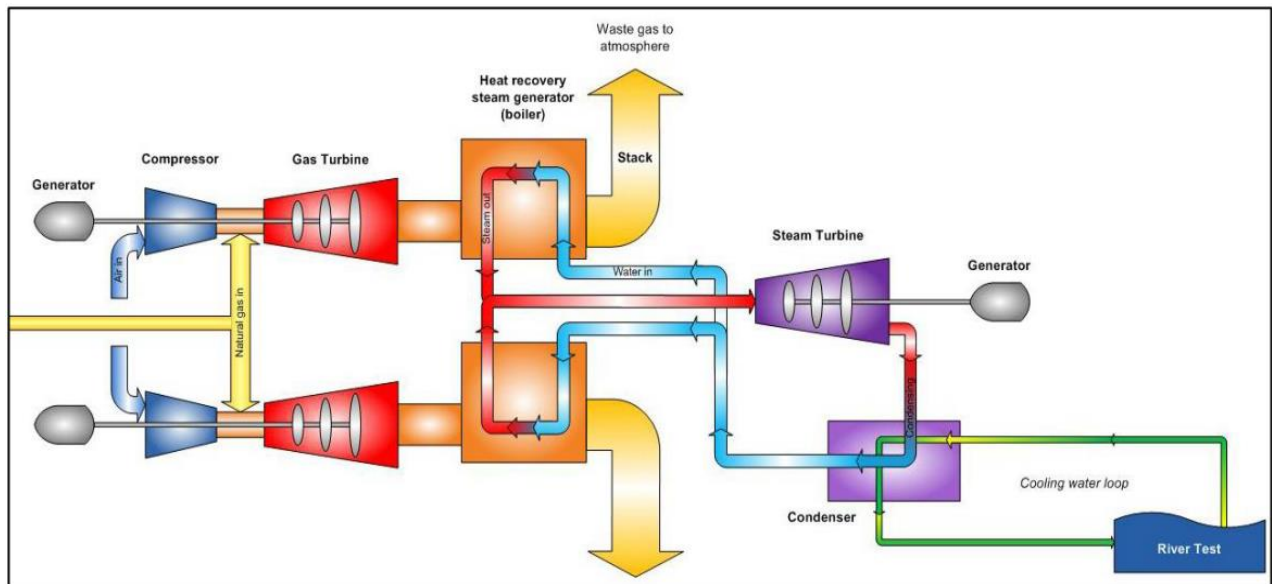


Figure 2-3: Process Flow Diagram of Power Plant

The exhaust gases of each gas turbine is discharged through a bypass damper which is positioned to direct the exhaust gas either through bypass stack into the atmosphere (in case of simple cycle operation) or into the HRSG (in case of combined cycle operation). The gas turbine/HRSG can be started up using bypass stack and 100% capacity of steam bypass to condenser. The HRSG, when operational, generates High Pressure and Low Pressure superheated steams at Gas Turbine base load operation with natural gas/ Diesel firing. The steam generated from the HRSGs is delivered to the steam turbine to generate power.

Exhaust steam leaving the steam turbine is condensed in the de-aerating condenser. The condensate water is pumped from the condenser hot well by condensate extraction pumps to the low pressure economizer or inlet of HRSG. High pressure HRSG boiler feed water pumps deliver the feed water from the LP drum to the HP steam drums through their economizers. The amount of water losses in the system caused by blowdown of HRSG has to be made up by the demineralized water storage tank.

Exhaust gas after exchanging the heat is released at a temperature of 140°C (for liquid fuel) and much less temperature (for gas) through a chimney of height 75m.

The plant is designed to use two kinds of fuel, Natural gas (NG) and High Speed Diesel (HSD) for power generation using the same sets of equipment. The natural gas will be supplied by the Titas Gas Transmission and Distribution Company Limited, a Bangladesh Government owned company. The gas will be delivered through existing gas pipeline just outside the power plant. Diesel is being supplied by Bangladesh Petroleum Corporation (BPC) by river through its larger vessels of 1000 MT capacity at the floating jetty located on the river Meghna at the south eastern corner of the project site. However, as reported, since commissioning the plant has only been operating on high speed diesel (HSD) due to unavailability of gas. Water requirements for the plant are met from Meghna River, including requirement for chemical treatment, industrial service, potable water and fire-fighting.

The evacuation of electric power generated by the Power Plant is through the existing six 230 kV circuits connecting nearby 230/132 kV existing substations at Hasnabad, Comilla and Haripur owned by Power Grid Company of Bangladesh Limited. The connection to this plant is at existing Meghnaghat 230 kV switchyard, adjacent to the Project.

2.6.2 Main Equipment and Specification

The plant consists of two (2) Gas Turbines/Generators, two (2) Heat Recovery Steam Generators and one (1) Steam Turbine/Generator including other auxiliary project facilities.

The features of the main equipment are as follows:

- **Gas Turbine:** The gas turbine unit is designed to fire natural gas fuel / HFO. There are two gas turbines in this project. The gas turbines have nominal output of 126.1 MW with Reverse-Flow Type of burners.
- **Heat Recovery Steam Generator (HRSG):** Two sets of Heat Recovery Steam Generator with bypass stack are installed. The exhaust gases from the gas turbine are discharged through a bypass damper which can be positioned to discharged the exhaust gas either through bypass stack into the atmosphere (during simple cycle mode) or to the HRSG (during combined cycle mode). Hot gases in the HRSG generate HP and LP superheated steams at Gas Turbine base load operation. The HRSGs consist of super heaters, evaporators, economizers and steam drums unfired, in double pressure, natural circulation design. The HP superheated steam at the outlet has pressure of 7.66 MPa(g) and temperature of 505°C, while the LP superheated steam at the outlet has pressure of 0.73 MPa(g) and temperature of 259.4°C.
- **Steam Turbine Generator:** The turbine is a dual pressure, and impulse, condensing steam turbine used for CCPP, which collaborated with gas turbine, heat recovery steam boiler (HRSG), generator and other auxiliaries to form a set of power generation equipment. It can be used for CCPP to generate power by utilizing recovered heat, which can in great deal improve the whole CCPP efficiency and reduce power generation cost. The steam turbine has rated power of 125 MW, 71 bar inlet pressure and 533°C of inlet temperature. The steam turbine has a primary steam flow rate of 372.1 tons/ hour.
- **Stack:** Bypass stack section completes with one diverter damper with one set of hydraulic operating or control station, and 2x100% air sealing fans (one operating & one standby), emissions testing ports and other necessary auxiliaries are provided for each Gas Turbine Generator (GTG) to permit continuous simple cycle operation. HRSG bypass stack is made of carbon steel and the outlet elevation is approx.50 meters in height. The HRSG stack is made of carbon steel and the outlet elevation shall be 75 meters. Table 2-1 provides technical specifications of the gas turbine and generator.

Table2-1: Technical Specification

Gas Turbine	
Feature	Specification
Fuel System	Dual Fuel (Heavy Fuel oil+ Natural Gas)
Starting Means	Electrical Motor
Compressor/Turbine Cleaning	On and Off-Line Compressor Water wash, Power Turbine Water Wash, Turbine Dry Abrasive
Emissions Control	Gas - Water injection Liquid – Water injection
Fire Detection	Heat Detectors
Gas Leak Detection	Gas Detectors
Fire Protection	High pressure CO2 system
Generator	
Feature	Specification
Model	9A5

Frequency	50Hz
Power Factor(Pf)	0.8 Lagging, Capability to 0.95 Leading
Terminal Voltage	14.5kV

2.6.3 Main Auxiliary systems

The main auxiliary units installed at the power plant site are as follows:

Water Systems: The circulation cooling water is used for condenser cooling and the cooling type is once-through. All water requirements for the plant are met from drawing water from Meghna River. As reported, the Plant has no cooling towers as on date. Smaller radiator based cooling systems have been installed; however, those are also currently not in use. The circulation water is discharged into the river directly. The river water temperature is measured daily at the outfall point (50 m downstream), and records are maintained by SMPCL.

SMPCL undertook a software modelling exercise using MIKE 3 Flexible Mesh (FM) to assess the extent of thermal plume dispersion in river Meghna at the water outfall. It was found out that the incremental rise in temperature due to the outfall will be within the standard prescribed by Department of Energy, Bangladesh and thus will not have any significant impact on the river quality and ecosystem. The predicted temperature is below 40°C. The increase in temperature observed is very low, limited to a very small area and well within the DoE standards.

Fuel Storage: The HSD for the Plant is being supplied by Bangladesh Petroleum Corporation (BPC) by river through its larger vessels of 1000 MT capacity at the floating jetty located on the river Meghna at the south eastern corner of the project site.

The natural gas will be supplied by the Titas Gas Transmission and Distribution Company Limited, a Bangladesh Government owned company. The gas will be delivered through existing gas pipeline just outside the power plant.

As reported, there are seven (7) fuel tanks for storing of HSD. (2 X 7000 cu.m capacity and 5X 2000 cu.m) within the project premises in the geographical south direction.

Fuel Oil Treatment System: Fuel oil treatment system is composed of HFO transfer pump skid, heat recovery skid, heat exchanger skid, electrostatic treatment skid, and other auxiliary skid. 3 X 50% capacity Centrifugal Liquid Fuel transfer pumps to transfer HFO from bulk storage tank to treated oil tank through the conditioning equipment are provided.

Fuel Gas Treatment System: The fuel gas system is composed of fuel gas treatment system and final skid. The natural gas that comes from the upstream pipeline enters the fuel gas treatment system through inlet section. The solid particles and droplets will be separated in here and drained to the condensate tank by the drain system.

2.6.4 Associated facilities

Power Evacuation: The electric power generated by the Power Plant is evacuated through the existing six 230 kV circuits connecting nearby 230/132 kV existing substations at Hasnabad, Comilla and Haripur owned by PGCB (Power Grid Company of Bangladesh Ltd). The connection to this plant is at existing Meghnaghat 230 kV switchyard.

Water: Water requirements for the plant are met from Meghna River, including requirement for chemical, industrial service, potable water and fire-fighting. Total water consumption was 28194 cu.m for the month of March 2016.

Floating jetty: A floating type jetty has been constructed for transfer of HSD, which limits any potential impact associated with construction of a permanent jetty.

2.6.5 Status of Permits

The status of the various permits obtained from regulatory authorities is as provided in Table 2-2. All the permits were noted to be valid.

Table 2-2: Status of Permits

S. No	Type of Permit	Issue Date	Validity	Issuing Authority	Current Status
1	Generation License	04 th Feb2016	12 th Feb 2017	Bangladesh Energy Regulatory Commission	Valid
2	Factory License	6 th Dec2015	31 st Dec 2016	Chief Inspector of Factories	Valid
3	Environment License	5 th Aug2015	30th March 2016	Department of Environment	Applied for renewal dated 17-Feb-16
4	Permission to Store HSD	31 st Dec 2015	31st Dec 2016	Chief Inspector of Explosives	Valid
5	Fire License	30 th Jun2015	30th Jun 2016	National Civil Defense	Valid
6	Boiler License	28 th Jun 2015	28th Jun 2016	Chief Inspector of Boilers	Valid

2.7 Environment Health, Safety and Social Scenario

2.7.1 Environment

The project was accorded with Environmental Clearance (EC) in August 2013. SMPCL had engaged M/s SGS India Private limited to undertake the Environment and Social Impact Assessment (ESIA) of the project as per the requirements of Department of Environment (DOE), Bangladesh and of International Finance Corporation (IFC).

SMPCL has reportedly identified a certification service providing organization and has already drafted policies and procedures to implement ISO 14001 and OHSAS 18001 in its operations. The first stage of the audit for certification is expected to be undertaken by June 2016 and the certifications are expected to be before the end of year 2016.

In compliance with the requirements of the EC, SMPCL undertakes regular environmental monitoring for the project at onsite and offsite locations for parameters such as ambient air quality (onsite and offsite), ambient noise levels (on monthly basis for onsite and offsite locations), wastewater discharge quality (monthly basis), river water and groundwater quality (quarterly basis) and result were found to be within the IFC standard limits. Details are provided in the section 3.3 of this report.

With respect to managements system, SMPCL has formulated EHS procedures, operational procedures, administration and planning procedures etc. The first stage of the audit for ISO certification is expected to be undertaken by June 2016 and the certifications are expected to be before the end of year 2016.

2.7.2 Health and Safety

SMPCL has developed a set of procedures and plans pertaining to EHS and social aspects, which are reviewed monthly by the formulated EHS committee. SMPCL has undertaken Hazard Identification and Risk Assessment

(HIRA) for health and safety risks as well as Aspect Identification and Impact Evaluation (AIIE) for environment risks considering the operational aspects. Risk mitigation and reduction measures are documented and practiced based on the EHS Management Plan guidelines. Details are provided in the following sections.

2.7.3 Social and Stakeholder

SMPCL has developed social related management procedures such as Grievance redressal mechanism and socio-economic environment protection and Stakeholder engagement plan. From the document review, it is ascertained that the social related procedures appear to be adequate. The procedures are implemented through the O&M contractor, M/S KEPCO, who has a contractual obligation to adhere to these requirements.

2.8 Project Categorization

The power plant falls under “red category” according to the Bangladesh Environment Conservation Rules 1997 (GoB, 1997). For projects under this category, it is mandatory to carry out Initial Environmental Examination (IEE) followed by Environmental Impact Assessment (EIA) including Environmental Management Plan for getting environmental clearance from the Department of Environment (DoE).

In accordance to the screening criteria of the IFC, the project can be categorized Project as Category B on the basis of the following:

- The Project is located on a land parcel which was acquired as part of a larger developed area known as Meghnaghat Power Sites Area (MPSA) which was developed by BPDB for siting of power generation plants. Prior to site development, the MPSA was utilized for the seasonal production of rice, wheat, pulses, oilseeds, eggplants, tomatoes, sweet potatoes, and watermelon
- The land was acquired in year 1999. Reportedly, there are no outstanding issues related to land acquisition.
- The Project does not envisage any physical displacement of community
- The impact on environmental components i.e. air-shed, receiving water body and ecology, as assessed through ESIA study and other related information is considered as site specific and mostly reversible and can be addressed through mitigation measures;
- Evacuation of power does not require installation of long transmission line as the switchyard is adjacent to the site;
- Availability of gas supply in close proximity reduces the need for large infrastructure for pipeline;
- A floating type jetty has been constructed for transfer of fuel, which limits any potential impact associated with construction of a permanent jetty;
- A series of mitigation measures related to environment and social aspects have already been implemented by the project after recommendations from several assessments such as ESIA, ESDD, annual monitoring status assessments carried out over the years since 2013.

2.9 Project Documents Reviewed

The list of project documents made available for the due diligence review is provided below.

Environment related

1. Environmental And Social Impact Assessment report of 305-350 MW Dual Fuel Combined Cycle Power Plant At Meghnaghat, Bangladesh, prepared by SGS India Private Limited, India, dated 16-June-2013
2. Environment Clearance certificate

3. Initial Information Request – Thermal Power Projects as submitted to DEG
4. Background of Sponsors
5. Ambient Air Quality monitoring records – onsite and offsite
6. Continuous Environmental Monitoring System (CEMS) for stack monitoring records
7. Noise monitoring records, monthly records for year 2015
8. Ground water test report
9. River water test report
10. In-house testing report for river water
11. Treated effluent test reports
12. General waste generation and disposal records
13. Hazardous waste disposal records
14. Heat Recovery Steam Generator (HRSG license)
15. Fuel consumption records – Jan 2014 upto Feb 2016
16. Point and non-point source of emission
17. Record of generation of CO2 equivalent
18. Water Balance diagram
19. Water treatment system
20. Effluent treatment system
21. Monitoring records for effluent
22. Monitoring records for treated effluent
23. Discharge of treated effluent records
24. Agreements with waste management agencies- general, hazardous, biomedical
25. Annual Monitoring Report
26. Environment and Social Management Procedure
27. EHS policy
28. EHS Committee members and Minutes of the Meetings records

Social related

1. Human Resources Policy and Procedures of Summit Industrial & Mercantile Corporation (Pvt.) Ltd.;
2. Site Clearance Certificate;
3. Meghnaghat Land Lease Agreement;
4. Minutes of Meetings for Public Consultations
5. Attendance register
6. Organization Chart – SUMMIT and O&M Contractor
7. Land Lease agreement
8. Grievance redressal mechanism

Health & Safety related

1. Health and Safety Policy;
2. Summit Safety Management Guideline;
3. License for intake and outfall structure and oil jetty;
4. Project EHS Plan;
5. On-site EHS Procedures:
 - Daily EHS Instruction Record
 - Weekly Site Inspection Checklist
 - Medical Plan
 - Incident report form

- Emergency Contact List
 - Project Environment Plan
6. Training records
 7. List of admin, EHS and operational procedures
 8. HIRA
 9. PPE Distribution matrix
 10. Permit to work system records – for confined space entry, LOTO
 11. First aid procedure and arrangements at project site
 12. Ambulance availability check
 13. Agreement with Hospital
 14. Drinking water test records
 15. Fire license
 16. Permission to store liquid fuel
 17. Factory License
 18. Emergency response plan

Others

1. Power purchase Agreement
2. Plant location
3. Plant description
4. Equipment List
5. Operation and Maintenance Agreement-KEPCO
6. Fuel Supply agreement
7. Gas Supply agreement
8. Power generation license

CONFIDENTIAL

3.0 Document Review and Assessment of Compliance

This section details the compliance status of the project with respect to requirements under IFC's Sustainability Framework, 2012, IFC's industry sector EHS guidelines, IFC's general EHS guidelines and applicable national and local regulations. The observations made during the desktop based due diligence and gaps identified are discussed below.

3.1 Performance Standard (PS) 1: Assessment and Management of Social & Environmental Risks and Impacts

3.1.1 Environment and Social Management System

Requirement 1:

Environment and Social Management System: The client is responsible to establish and maintain an ESMS, appropriate to the nature and scale of the project and commensurate with the level of its environmental and social risks and impacts. The ESMS will incorporate the following elements: (i) policy; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review.

Policy: The client will establish an overarching policy defining the environmental and social objectives and principles that guide the project to achieve sound environmental and social performance. The policy will indicate who, within the client's organization, will ensure conformance with the policy and be responsible for its execution (with reference to an appropriate responsible government agency or third party, as necessary). The client will communicate the policy to all levels of its organization.

Observation 1:

It was noted during the document review that though SMPCL has not maintained a consolidated EHSS Manual (Environment, Health, Safety and Social), a series of procedures on EHS aspects (12 procedures), operations (26), administration and planning (9), chemical handling (7), mechanical (8), electrical maintenance (9), instrumentation & control (7) have been formulated, maintained and implemented for the project.

However, EHS procedures for the construction phase and decommissioning phase has not been developed.

The Admin & Planning and EHS related procedures have been listed below.

Admin and Planning Procedures

1. New Employee Orientation
2. Procurement Policy and Procedure Manual
3. Inventory Management Guidelines
4. Training, Competence and Awareness
5. Fixed Asset Management
6. Hiring and Staffing Guidelines
7. Petty Cash Management
8. HR Policy and Procedure_KEPCO-KPS
9. Security Policy and Procedure

EHS Procedure

1. EHS Policy
2. Permit to Work
3. Caustic Acid and Chlorine handling
4. Emergency response Procedures
5. Electrical Safety program
6. First Aid
7. Environmental and Social Management Plan and Procedure
8. Spill prevention and response procedure
9. Spill Release reporting procedure
10. Waste Management procedure
11. Community Development procedure
12. Grievance redress mechanism procedure

As reported in the Annual Monitoring Report of SMPCL, dated Feb 2016, the operational procedures have been revised to suit operational requirements during combined cycle operations of the Plant and have been submitted for approval from Board of Directors of SMPCL in November 2015.

It is noted during document review that monthly meetings are conducted for EHS Management Committee members to discuss and get updates on safety statistics, status updates, review and revision of SOPs, new EHS related regulation, safety related complaints, if any. Records dated 27-Jan-2016 and 17-Feb-2016 were examined during the due diligence assessment.

The reviewed EHS Policy states that SPMCL shall comply with all the applicable laws and regulations of the country and country's other obligations under International laws, and shall adhere to highest standards for the safe operation of the Plant and protection all its stakeholders including visitors, contractors, suppliers, contract workers, customers, citizens of the community and the surrounding environment. The annual EHS inspection schedule for year 2015 and 2016 furnished by SMPCL. Based on review of the documentation, it was noted that the EHS Policy review is a bi-annual process; however, the evidence of review of the policy statement in the year 2015 was not furnished.

SMPCL has also been aiming to implement Management System certified to ISO 9001 and ISO 14001 and has drafted policies and procedures to implement the same. As per the discussions, the first stage of the audit for certification is expected to be undertaken by June 2016 and the certifications are expected to be before the end of year 2016.

3.1.2 Identification of Risks and Impacts

Requirement 2:

The client will establish and maintain a process for identifying the environmental and social risks and impacts of the project. The type, scale, and location of the project guide the scope and level of effort devoted to the risks and impacts identification process. The process may comprise a full-scale environmental and social impact assessment, a limited or focused environmental and social assessment, or straightforward application of environmental siting, pollution standards, design criteria, or construction standards.

The risks and impacts identification process will be based on recent environmental and social baseline data at an appropriate level of detail.

The client will establish legal requirements for both social and environmental parameters, including those laws implementing host country obligations under international law, will also be taken into account.

Observation 2:

SMPCL has conducted an ESIA study through M/s SGS India Private Limited as per the legislative requirements of Government of Bangladesh (GoB), IFC's Performance Standards, IFC's General EHS Guidelines, dated 2007 and Equator Principles. The ESIA was conducted to assess the impacts on the environment due to the construction and operation of the power plant and recommendations on preventive measures to be taken to minimize the impact on the environment to acceptable levels. Environmental baseline data was generated through primary monitoring of meteorological parameters, ambient air quality, water quality, soil quality, noise level and traffic, ecological along with socio-economic survey. Secondary data for geology, land-use, topography, was collected as a part of baseline study.

Potential E&S impacts in the construction and operation phase have been identified in the ESIA report. Impacts on air quality, water quality, noise levels, traffic and socio-economic aspects have been detailed out. Industrial Source Complex Short Term, version 3 (ISCST3) (1999), a dispersion model of Environment Protection Agency of USA has been used in the ESIA to predict the air pollutant concentration levels in the ambient air quality of the area.

A software modelling exercise using MIKE 3 Flexible Mesh (FM) has also been conducted to assess the extent of thermal plume dispersion in river Meghna at the water outfall. Details have been presented in Section 3.3 PS-3 below.

The ESIA report has a detailed section on Environmental Management Plan (EMP). Based on the EMP, SMPCL has formulated an Environmental and Social Management Plan (ESMP) to manage and monitor the identified E&S risks. Annual monitoring is being conducted by third party to check the implementation of ESMP and suggestion made in due diligence conducted in 2013.

Risk assessment has also been carried out for oil tank farm and natural gas supply pipeline. A disaster management plan has also been formulated in the ESIA report. A thermal plume modelling exercise was carried out using MIKE 3 Flexible Mesh to assess the dispersion of the thermal plume in river water and its impact zone.

SMPCL has also undertaken Hazard Identification and Risk Assessment (HIRA) for health and safety risks due to system failure as well as Aspect Identification and Impact Evaluation (AIIE) for environment risks, considering aspects including waste generation, chemical and oil spill, chemical waste generation, high noise, gas leakage, use of energy etc. and developed a HIRA-AIIE register. As reported in the Annual Monitoring Report 2016, the register was finalized based on the discussion with the site management and is implemented.

The ESIA provides a section on applicable legislations and other applicable standards / guidelines. As reported, SMPCL has also developed an E&S obligations register to identify legal requirements and for maintaining the legal compliance status. The status of the permits is discussed during the monthly EHS meetings and compliance of these requirements are monitored. Minutes of the Meetings of EHS committee were examined during the document review.

The project was accorded with Environmental Clearance by Department of Environment in year 2013, with validity up to 30-Mar-2016. SMPCL has filed an application dated 17-Feb-16, for renewal of Environmental Clearance to the Deputy Director, Department of Environment. The related records were examined during the assessment.

3.1.3 Management Programs

Requirement -3:

The client will establish management programs, that, in sum, will describe mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the project.

Depending on the nature and scale of the project, these programs may consist of some documented combination of operational procedures, practices, plans, and related supporting documents (including legal agreements) that are managed in a systematic way.

The level of detail and complexity of this collective management program and the priority of the identified measures and actions will be commensurate with the project's risks and impacts, and will take account of the outcome of the engagement process with Affected Communities as appropriate.

The management programs will establish environmental and social Action Plans, which will define desired outcomes and actions to address the issues raised in the risks and impacts identification process, as measurable events to the extent possible, with elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, and with estimates of the resources and responsibilities for implementation.

Observation 3:

SMPCL's Environment and Social Impact Assessment Report (ESIA) has provided a section on Environment Management Plan that mentions remedial measures, time- frame and responsibility for implementation for the following aspects – wastewater, gaseous pollution, air quality, emission quality, water quality, noise, solid waste, hazardous waste, occupational health and safety, fire safety, socio-economic.

Based on the EMP, SMPCL has formulated an Environmental and Social Management Plan (ESMP) to manage and monitor the identified E&S risks. The procedures under this Plan are implemented through the O&M Contractor, M/S KEPCO, through a legally binding contract, The Plant Manager, KEPCO submits monthly compliance/ implementation reports to the DGM Operations & Compliance of SMPCL for verification. The procedures included in the Plan are:

1. Monitoring of environmental quality
2. Occupational health and safety
3. Fire safety
4. Statutory requirements and implementation
5. Training
6. Grievance redressal mechanism and socio-economic environment protection
7. Stakeholder engagement plan

Based on the review of the records provided during the assessment, it was noted that the above-mentioned environmental and social procedures have been implemented on site.

3.1.4 Organizational Capacity and Competency

Requirement -4:

The client, in collaboration with appropriate and relevant third parties, will establish, maintain, and strengthen as necessary an organizational structure that defines roles, responsibilities, and authority to implement the ESMS.

Personnel within the client's organization with direct responsibility for the project's environmental and social performance will have the knowledge, skills, and experience necessary to perform their work.

Observation- 4:

SMPCL, under its Environment and Social Management Plan, has defined an organizational structure to implement the ESMS. KEPCO, under its contractual obligation with SMPCL is fully responsible for implementation of procedures related to environment, health, safety and social aspects within the project, along with O&M of the Plant.

The Plant Manager (from KEPCO), is a qualified EHS personnel with more than 23 years of work experience in EHS Management at project sites. SMPCL has also deputed its own O&M team, comprising three (3) of its employees viz. DGM (Operation & HSE compliance), Assistant Manager, EHS and Safety & Community Liaison Officer, to monitor and manage the project operations including E&S management, security, housekeeping and grievance issues. The organization chart has been provided in Figure 2-2.

The roles and responsibilities of the personnel identified for implementation of the ESMP have been defined in SMPCL's EHS Procedure

SMPCL has also formulated three committees (with representation from SMPCL and KEPCO employees) to ensure safe work environment. These comprise the following:

1. EHS Committee: The committee has following members who meet on monthly basis.
 - The Plant Manager, KEPCO
 - DGM (Operation & Compliance), SMPCL
 - DGM-Maintenance & Contracts, SMPCL.
 - The Operation General Manager, KEPCO.
 - The EHS Manager, SMPCL
 - The Maintenance General Manager, KEPCO
 - The I&C and Electrical General Manager, KEPCO
 - All shift charge Engineers, KEPCO.
 - Senior Engineer Mechanical, KEPCO
 - Senior Engineer I&C, KEPCO
 - Senior Engineer Electrical, KEPCO
 - Safety & Community liaison Officer, KEPCO
 2. Grievance Redressal Committee (GRC) – (Plant Level) - For Employees and Community. The members of the GRC-Plant are as follows:
 - EHS Manager-SMPCL
 - Plant Manager-KEPCO
 - DGM (O&C) – SMPCL
 - GM (Maintenance)-KEPCO
 - Safety & Community liaison Officer– KEPCO
 3. Grievance Redressal Committee (GRC) – (Corporate): All grievances, which cannot be resolved at the plant site level, are escalated to GRC-Corporate committee for resolution. The GRC-Corporate has the following members:
 - CEO – SMPCL
-

- Plant Manager-KEPCO
- Safety & Community liaison Officer– KEPCO

However, it was noted that no representation from the workers are there in the above mentioned Committees.

Records of monthly EHS Meetings held on 27-Jan-2016 and 17-Feb-16 were reviewed. Records in the form of Minutes of Meetings of GRC dated 14-July-16 and 24-Dec-16 were also made available for review.

Requirement - 5:

Training to employees and contractors with direct responsibilities for activities related to the project's social and environmental performance.

Observation- 5:

Under Admin and Planning Procedures, SMPCL has formulated Training, Competence and Awareness procedure (SMPCL-AP-004) to ensure adequate competency of employees to perform tasks in professional manner technically and to address training needs that may have an impact on Environment, Health and Safety in workplace activities.

SMPCL has formulated a Training Calendar covering the following EHS topics for year 2016:

1. EHS Policy & Practice
2. All work related PPE requirement;
3. Basic Electrical Safety Training
4. Work Permit (Work permit, Hot work permit, confined work permit, Excavation permit, work at height etc)
5. Fire Fighting Training, prevention & Control
6. Fall Protection System & Scaffolding;
7. Crane, fork lift Safety during Operation
8. Compressed Gas Cylinder safety
9. Oil & Chemical Spillages prevention training
10. Grievance Addressing Procedure
11. Emergency Response training
12. First Aid Training
13. Hazardous Materials and Waste Management system
14. i) All work related PPE requirement; ii) Basic Electrical Safety Training
15. EHS Policy & Practice, Plant EHS guideline, Emergency response procedure, Plant Fire Fighting
16. Behavioral guideline for Personnel handling by security
17. Chemical and Flammable Materials Handling

The training calendar mentions the training title, name of the trainer, target trainee group. To reassess the frequency of trainings, yearly evaluation is undertaken during monthly EHS Committee meetings. Training needs of employees are reportedly assessed during employee's annual performance evaluation. Training feedbacks are also taken from the participants through a questionnaire session. Records pertaining to same are maintained.

Monthly records for EHS Trainings conducted from July 2014 onwards through Feb 2016 were reviewed during the desktop assessment. SMPCL also conducts mock drills every two months, covering the following topics:

- Chlorine leakage & Medical emergency
- Plant fire Emergency
- Oil spill emergency
- Explosion & Collapse of structure emergency
- Gas Leakage
- Plant Fire emergency

KEPCO maintains EHS training and mock drill status register and shares the same with SMPCL on monthly basis. Records for year 2015 were reviewed during the assessment.

The Environmental and Social Management Plan and Procedure also mandates compulsory introductory trainings for any Vendor/Contractor/subcontractors hired by SMPCL covering all the EHS issues and practice prior to start work in the SMPCL premises. The training topics include:

- Plant EHS policy & Practice
- SMPCL working procedure & practice
- Emergency response action for the contractor people
- Waste disposal procedure

During the annual monitoring conducted in December 2015, it was suggested by the assessors that training requirement for security, kitchen staff and housekeeping staffs (third party workers) should be identified and training calendar for the year 2016 to be updated accordingly.

The updated training calendar for 2016 was reviewed and it was observed that training requirements on Grievance addressing procedure, First aid, EHS Policies and Practices, Emergency Response Procedure and Fire fighting for third party workers have been identified and included.

3.1.5 Emergency Preparedness and Response

Requirement 6:

Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts, the ESMS will establish and maintain an emergency preparedness and response system so that the client, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment.

Where applicable, the client will also assist and collaborate with the potentially Affected Communities and the local government agencies in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to ensure effective response. The client will document its emergency preparedness and response activities, resources, and responsibilities, and will provide appropriate information to potentially Affected Community and relevant government agencies.

Observation- 6:

SMPCL has prepared an Emergency Management Procedure detailing the roles and responsibility of the EHS Manager, incident commander, emergency coordinator, search and rescue team, Emergency response team, defining various phases of emergency response plan comprising the following:

- Fire and explosion
- Gas Fire
- Medical emergency response and Evacuation
- Hazardous material Release
- Earthquake response
- Chlorine emergency response
- Bomb threat
- Severe weather Plan
- Spill Response During Transportation & Transfer
- Training and exercise Drills

- High Voltage Emergency Response

The Emergency Management Procedure also mentions offsite emergency response procedures. Details have been provided in section 3.4

3.1.6 Monitoring and Review

Requirement -7:

The client will establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements. Where appropriate, clients will consider involving representatives from Affected Communities to participate in monitoring activities

Observation- 7:

SMPCL has maintained EHS monthly inspection schedules. Schedules for year 2015 and 2016 were examined and were found to be endorsed by the Plant Manager, DGM, Operations and COO. The following inspections/ reviews and related revisions have been mentioned in the Schedule:

Table 3-1: EHS Inspection Schedule

S No	Aspect	Frequency of inspection/ review	Responsibility within O&M Contractor team
1.	Policy review	Bi-annually	undertaken by EHS Committee
2.	Emergency mock drill		every two months
3.	Firefighting system (mechanical and electrical)	Monthly	undertaken by KEPCO and status updated to SMPCL
4.	Hydrant system,	15 days	KEPCO operations team
5.	Portable extinguishers	Monthly	Safety Officer
6.	Work Place inspection	Quarterly	Operations
7.	Emergency equipment inspection	Monthly	Operations
8.	Heavy equipment inspection	Quarterly	Operations
9.	Ladder inspection	Monthly	Operations
10.	Shower and eyewash	Monthly	Operations
11.	SCBA	Monthly	Operations
12.	First aid box	Monthly	Operations
13.	Chemical laboratory inventory	Monthly	Plain chemist
14.	Ear muff and plugs	Monthly	Operations
15.	Emergency phone	Monthly	Operations
16.	Exit lights	Monthly	Operations
17.	Inspection of Kitchen and dormitory	Bi-annual–	undertaken by SMPCL/ internal audit
18.	EHS reports	Monthly	KEPCO and submitted to the DGM (Operation & compliance).

The O&M Contractor team (KEPCO) undertakes all inspections and status is maintained in an EHS Inspection status register. The status is updated with SMPCL on monthly basis. Issues identified are discussed in the monthly EHS Committee meetings and remedial actions to be taken are noted. Follow up on the actions taken are updated with SMPCL in their subsequent meetings.

As per the document review, the minutes of such EHS meetings are prepared by KEPCO, submitted to the DGM (Operation & compliance), and shared with the participants after his endorsement. Based on the inputs on the EHS monthly report, performance measurements are made and discussed during the meeting. Action points based on the

discussion of the previous Minutes of Meeting are tracked suitably and records are maintained. Records of the EHS reports for Jan 2016 till Mar-16 were scrutinised and found to be compliant to the requirement of the ESMP.

SMPCCL also undertakes regular environmental monitoring for the project at onsite and offsite locations for parameters such as ambient air quality (onsite and offsite), ambient noise levels (on monthly basis for onsite and offsite locations), wastewater discharge quality (monthly basis), river water and groundwater quality (quarterly basis). Details have been discussed in Section 3.3 PS-3 Resource Efficiency and Pollution Control.

3.1.7 Stakeholder Engagement

Requirement -8:

Stakeholder Analysis and Engagement Planning: Clients should identify the range of stakeholders that may be interested in their actions and consider how external communications might facilitate a dialog with all stakeholders. The client will develop and implement a Stakeholder Engagement Plan that is scaled to the project risks and impacts and development stage, and be tailored to the characteristics and interests of the Affected Communities.

Disclosure of Information: The client will provide Affected Communities with access to relevant information on: (i) the purpose, nature, and scale of the project; (ii) the duration of project activities; (iii) any risks to and potential impacts on such communities and relevant mitigation measures; (iv) the envisaged stakeholder engagement process; and (v) the grievance mechanism.

Consultation: When Affected Communities are subject to identified risks and adverse impacts from a project, the client will undertake a process of consultation in a manner that provides the Affected Communities with opportunities to express their views on project risks, impacts and mitigation measures, and allows the client to consider and respond to them.

The client will tailor its consultation process to the language preferences of the Affected Communities, their decision-making process, and the needs of disadvantaged or vulnerable groups. The consultation should also focus inclusive engagement and be documented.

Observation- 8:

As the part of ESIA, formal and informal consultation exercises had been undertaken with various categories of stakeholders to obtain their views, perception, expectation and concern issues.. The stakeholders who were consulted are as follows:

- Department of Environment (DOE)
- Bangladesh Petroleum Corporation (BPC)
- Sonargaon Upazila Fisheries, Department of Fisheries
- Local NGOs
- Tetultala and BIWTA Ghat Fish Trader Association
- Association of Local Fishers
- Fishermen Community
- Owners of Kata Fishing Unit (Pulse fishing)
- Authority of Existing power plant
- Representatives and individual residents from surrounding seven study village

The key points of discussions during the stakeholder consultation as reported, are as follows:

- Introduction of proposed project and entrepreneur among the local people
- Dissemination of basic information about the project interventions
- Collection of environmental and socioeconomic data/information
- Sharing identified potential impacts
- Assessing stakeholder perception, expectation and concern environmental and social issues
- Open discussion on draft ESIA report prior to finalization and
- Community support and to develop a long term trust worthy relationship with the local people

SMPCL, through KEPCO conducted yearly consultations with the project affected villages in year 2015. Records for consultation meetings at following villages were reviewed during the desktop assessment.

Table 3-2: Public Consultation details

S. No.	Village Name	Date of Consultation as per reviewed record
1.	Dudhghata and Kurbanpur	13 th September 2015
2.	Islampur	21 st September 2015
3.	Panchari	22 nd September 2015
4.	Ganganagar -	22 nd September 2015
5.	Char Balaki/ Bolakir char	22 nd September 2015
6.	Ashariar Char	29 th September 2015

As part of the IFC investment, SMPCL has developed a Community Development and Communication Procedure which entails the procedure for community development and CSR programs that can be undertaken in the nearby villages. The focus areas as defined by SMPCL include Education, Environment Protection, Skill development and Health & Safety. Under these focus areas, SPMCL has planned community development events which they intend to undertake during the upcoming years. The events planned include:

- Book distribution for the local school library
- Best Teacher Award Function (For Primary & High School Teacher's)
- Setup Tube well for Pure Drinking water
- Workshop for fishing community
- Poultry & Fisheries Workshop for youth
- Scholarship Program for outstanding academic result for 20 students
- Plantation Program
- Social Awareness Program
- Repair & maintenance of School
- Computer donation to School.

SMPCL has initiated CSR activities in the nearby villages in year 2015. In village Bolakir char and Ganganagar, renovation and repair works was taken up by SMPCL for mosque floor and a school building, respectively. On request of the villagers, approximately 1000 Feet open drain was covered by constructing slab over it. Photographs and documents furnished as evidences were reviewed during the desktop review.

As reported in the annual monitoring report, 2016, the residents of the two villages are satisfied with the engagement activities of SMPCL and KEPCO personnel. The community did not have any grievances pertaining to the plant operations. During their interactions with the auditors (in Dec 2015), the community representatives expressed that

the Safety and Community Liaison Officer of KEPCO is approachable and regularly interacts with them to understand their needs and issues.

3.1.8 External Communications and Grievance Mechanism

Requirement -9:

External Communications: Clients will implement and maintain a procedure for external communications. In addition, clients are encouraged to make publicly available periodic reports on their environmental and social sustainability.

Observation- 9:

In the Community Development and Communication Procedure, SPMCL has detailed out a procedure for communication between community and site personnel. The Community Liaison Officer is responsible for maintaining communication network with the project affected people.

As reported in the Annual monitoring reports, laminated leaflets have been displayed in the nearby seven villages, primary school in Bolokia Char village and community gathering place in Islampur village. The leaflets mention information about the grievance redressal procedure, emergency response plan, along with key contact numbers. Monthly results on ambient air quality, ambient noise levels and treated effluent quality have been included in the leaflets displayed at the villages.

Requirement -10:

Grievance mechanism for Affected Communities: Where there are Affected Communities, the client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance. The client will inform the Affected Communities about the mechanism in the course of the stakeholder engagement process.

Observation- 10:

SMPCL has developed a two tiered grievance redressal procedure to address the grievance raised by the community. Grievance Redressal Mechanism has been detailed out in Grievance Redress Mechanism Procedure.

SPMCL regularly informs the nearby seven villages about the stakeholder engagement process. As per the Annual Monitoring Report, 2016, SMPCL has displayed laminated leaflets mentioning key elements of the Grievance Redress Mechanism in the villages and other strategic locations such as at primary school in Bolokia Char village and community gathering place in Islampur village. The information leaflets mention the procedure of grievance redressal mechanism, emergency response plan and key contact numbers.

It is also reported that a suggestion/complaints register and grievance box has been kept at the security gatehouse, where the neighbouring community people and the project stakeholders can visit and register their comments, suggestions or complaints or drop their grievance letter in the drop box provided. These complaints/grievances are redressed through the GRC. Grievances that cannot be resolved at site level are escalated to the Corporate Grievance Redressal Committee (GRC).

3.1.9 Ongoing Reporting to Affected Communities

Requirement -11:

The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities and on issues that the consultation process or grievance mechanism have identified as a concern to those Communities.

Observation- 11:

SMPCL has disclosed the data on the environmental performance of the project to the community. As mentioned above, laminated leaflets have been displayed in the nearby seven villages, primary school in Bolokia Char village and community gathering place in Islampur village. The leaflets mention information about the grievance redressal procedure, emergency response plan, along with key contact numbers. Monthly results on ambient air quality, ambient noise levels and treated effluent quality have been included in the leaflets displayed at the villages.

3.1.10 Status of Compliance to PS-1

Overall compliance with PS1 is adequate, however, following non-compliances against IFC PS1 have been observed during the assessment process:

- **Policy:** The EHS Policy review is a bi-annual process; however, the evidence of review of the policy statement in the year 2015 was not furnished.

3.1.11 Recommendations

- **Revision of EHS Policy:** Subsequent to every review or updation of EHS policy or any EHS procedure (there should be a bi-annual review of EHS Policy as required per the EHS inspection calendar as mentioned in Table 3-1 above), the amendment dates or the revision dates should be updated in the record sheets and on the related documents in order to track the amendments.

3.1.12 Material Threshold

Considering the requirements of PS-1, none of observations made during the desk based ESDD are above the material threshold as defined in Section 1.4

3.2 Performance Standard (PS) 2: Labour and Working Conditions

3.2.1 Human Resource Management Policy and Procedure

Requirement 12:

The client will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of the Performance Standard and national law.

The client will provide workers with documented information that is clear and understandable, regarding their rights under national labour and employment law and any applicable collective agreements, including their rights related to hours of work, wages, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur.

Observation 12:

SMPCL has developed an “Employment Policy” which is applicable to all its probationary and full time employees. However, it is not applicable to the contract labour and security guards hired by SMPCL. The Policy covers general terms and conditions of services including appointment procedure, probation period, confirmation of service, promotion, retirement, employee’s code of conduct, pay scale, other financial benefits, transfer and change of designation. SMPCL has also developed documents pertaining to job categorization, leave policy, bonus policy, office timings, policy on non-employment of adolescent & child at work, anti-discrimination policy, anti- harassment & abuse at work policy, performance appraisal policy, anti-bribery & corruption policy, whistle blower policy.

As part of the admin and planning procedures, KEPCO, in consultation with SMPCL, has developed and maintained an HR policy in the form of “Employee Handbook”, which is applicable to the O&M staff present at project site. The HR Policy & Procedure (Hand Book) is provided to all the direct employees at the time of their joining. As per the laid down procedure, any changes or modifications to the existing policies in the Handbook are to be communicated to all employees through official notices in terms of revisions to the Handbook. The policy was noted to be endorsed by the senior management of SMPCL and KEPCO.

It was noted that KEPCO’s HR Policy & Procedure (Hand Book) covers company core values, corporate HR policy, code of conduct and ethics, manpower planning, recruitment procedure, compensation and benefits, employment terms, allowances and claims, benefits, wages and benefits, wage deductions, hours of work, overtime arrangements and overtime compensation, breaks, rest days, and leave for illness, maternity, vacation or holiday. In addition, there are also defined procedures such as non-discrimination, corporate social responsibility (CSR), grievance management. Induction training on HR policy and procedure is provided to all the new employees. However, the handbook does not mention of no objection on formation of worker’s organization, retrenchment policy, sexual harassment policy, no engagement of forced labor in facilities or in the supply chain, workers engaged by third party, supply chain.

Although, the contractors and vendors are managed through their respective formal contract and the terms and conditions placed therein, however, HR policies and procedures do not accommodate the contractors, vendors and operators engaged with the Company.

3.2.2 Working Conditions and Terms of Employment

Requirement 13:

Where the client is a party to a collective bargaining agreement with a workers’ organization, such agreement will be respected. Where such agreements do not exist, or do not address working conditions and terms of employment, the client will provide reasonable working conditions and terms of employment.

The client will identify migrant workers and ensure that they are engaged on substantially equivalent terms and conditions to non-migrant workers carrying out similar work.

Where accommodation services are provided to workers covered by the scope of this Performance Standard, the client will put in place and implement policies on the quality and management of the accommodation and provision of basic services.

Observation 13:

Wages: As per the review of the Employment Policy of SMPCL, it was noted that the elements pertaining to the pay scale of the employee has been defined. Gross salary comprise of house rent allowances, conveyance allowances,

medical allowance, special allowance, festival bonus. Also, SMPCL has provision for loan for their employees, subject to approval from the Managing Director.

The salary structure of KEPCO is divided into basic, house rent, conveyance and medical allowances. Deductions are made as per the income tax withholding; provident fund, if required as per law .

Other benefits given to the employees are listed below:

Working Hours: The general working hours for SMPCL employees are from 9:30 am - 5:30 pm (Monday to Thursday), 9:15 – 12:15 (Friday). For KEPCO employees, there are two (2) shifts (day shift from 8 am- 8 pm and night shift from 8 pm – 8 pm) on rotational basis. The interval time during workdays is half an hour.

Overtime arrangements and overtime compensation: KEPCO employees are entitled to payment for additional working hours / overtime done on normal office days, at the rate of 1.5 times of the employees' normal hourly basic salary for each hour worked or grant of at least 90 minutes paid off for each hours of overtime. For overtime done on weekly holidays or Public Holidays is paid at twice the normal hourly basic salary for each hour worked or time off equal to the difference in value between the pay received for working on holiday and the pay that the employees are entitled to. Shift Charge Engineers and Senior Engineers gets disturbance allowance at the rate of Taka 10,000 per month.

During the review of the wage register of M/s Meghna Enterprise (one of the sub-contractor engaged by KEPCO) dated 20-Dec-2015, it was noted that the normal hourly pay for the workers is 46.875 Taka. Overtime paid to the worker noted to be 70 Taka/hour which is approximately 1.5 times of the basic pay which is against the requirement of Bangladesh Labour Act, 2006 which says that "worker works in an establishment on any day or week for more than the hours fixed under this Act, he shall, in respect of overtime work, be entitled to allowance at the rate of twice his ordinary rate of basic wage and dearness allowance and ad-hoc. Reports of E&S Due Diligence, conducted in the year 2013 and other monitoring reports have been reviewed to ascertain whether any grievances reported pertaining to wages and overtime payment during the construction phase. No such cases have been reported in any of the reports reviewed.

Leave for illness: As per the review of the leave policy of SMPCL, employees are entitled for seven (7) days sick leave on salary paid basis. Sick leaves in excess to seven (7) days can be adjustable with annual or casual leave or being treated as leave without pay. Employees are entitled for 14 (fourteen) days of sick leave in a year and it may be accumulated up to 21 days with salary, on the prescription by a qualified doctor.

Maternity, vacation or holiday: Female employees are entitled to a maternity leave of maximum 90 days on submission of doctor's certificate and is restricted to a maximum of 2 (two) childbirth only. As reported, there are no female employees engaged by SMPCL and KEPCO.

No documents pertaining to wages, working hours, overtime payment made to the labour during the construction phase have been made available for review,

3.2.3 Workers' Organisation

Requirement 14:

In countries where national law recognizes workers' rights to form and to join workers' organizations of their choosing without interference and to bargain collectively, the client will comply with national law. Where national law substantially restricts workers' organizations, the client will not restrict workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment.

In either case described above, and where national law is silent, the client will not discourage workers from electing worker representatives, forming or joining workers' organizations of their choosing, or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations and collective bargaining. The client will engage with such workers' representatives and workers' organizations, and provide them with information needed for meaningful negotiation in a timely manner.

Observation 14:

As reported in previous audit reports, there is no restriction to form unions and collective bargaining system within the operations and no such policy was noted in the HR policy and procedures. However, reportedly there is no existing workers' union at SMPCL.

3.2.4 Non-Discrimination and Equal Opportunity

Requirement 15:

The client will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The principles of non-discrimination apply to migrant workers.

Observation 15:

SMPCL and KEPCO has developed anti-discrimination policy as the part their HR policy which clearly states Company's commitment against discrimination based on sex, gender, parental status, age, race, religion etc. It also states that any reports of unfair discrimination or harassment will be treated seriously and appropriate actions are taken.

Also, prior to the engagement of suppliers, SMPCL requires the supplier to submit a declaration on their letter head, signed by the senior management, on prohibition of child labour, non-discrimination, payment of wages and overtime as per the labour laws and provision of grievance redressal system. This aspect has been mentioned in the supplier management procedure developed by SMPCL under its 'Procurement Policies and Procedures Manual'. The manual also provides that suppliers are required to maintain weekly and monthly payment register for each worker and submit copy of wage register for the contract workers to SMPCL along with bill. The bill would be processed and payment of the supplier would be cleared only after review of the wage register.

3.2.5 Retrenchment

Requirement 16:

Prior to implementing any collective dismissals, the client will carry out an analysis of alternatives to retrenchment. If the analysis does not identify viable alternatives to retrenchment, a retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers.

Observation 16:

As per the HR Policy and Procedure, the workers are employed on direct and contract basis through contractors only. Contract workers are informed of the duration of work and other job related requirements prior to recruitment.

As reported, there have not been any occurrence of collective dismissals in the past and no such dismissals are intended in near future.

As per the laid down procedure, the Company can terminate a permanent employee without assigning any reason whatsoever. In case of termination after probation period, the employees will be given a minimum of 30 days notice period or pay in lieu of such notice.

3.2.6 Grievance Mechanism

Requirement 17:

The client will provide a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. The client will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them.

Observation 17:

KEPCO has developed a three- tiered, time bound Grievance Handling Procedure as the part of their HR Policy where immediate supervisor of the affected employee is responsible to address the grievance. If the grievance is not addressed at first level, it can be escalated to HR department, followed by General Manager and Managing Director.

SMPCL has developed a Grievance Redress Mechanism Procedure, which details out a two-tiered grievance redress procedure to address the grievance/issues raised by the employees. As detailed out in section 3.1.4 above, SMPCL has formed two Grievance Redressal Committees, one at the Plant level and second at the Corporate level.

As reported, SMPCL ensures that all its employees are well aware of the GRM procedure. The key elements of the GRM and contact details of grievance redressal committee (GRC) members have been displayed at the main gate of the plant and at strategic locations within the plant. A suggestion/ complaints register book and grievance box is kept at the security gate, which is accessible for employees for registering their grievances.

3.2.7 Child Labour/Bounded Labour

Requirement 18:

The client will not employ children in any manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Children under the age of 18 will not be employed in hazardous work. All work of persons under the age of 18 will be subject to an appropriate risk assessment and regular monitoring of health, working conditions, and hours of work.

The client will not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. The client will not employ trafficked persons.

Observation 18:

It was noted that KEPCO's HR Policy & Procedure states that no one below 18 years of age shall be hired as an employee for KEPCO KPS on regular, contract or temporary status. Also, condition pertaining to child labour is mentioned in the agreement between SMPCL and KEPCO.

SMPCL has formulated a policy on Non-employment of adolescent & child labour [HR 2015.03], which restricts engagement of any person below 18 years. It also states that in case, there is a doubt on the correct age of any hired employee, a medical examination should be conducted of the selected employee, as per the directions provided in Section 36 of Bangladesh Labour Act, 2006.

3.2.8 Occupational Health and Safety

Requirement 19:

The client will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the client's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women.

Observation 19:

- SMPCL and KEPCO jointly, have developed a comprehensive EHS procedures and have established a robust EHS organizational structure and responsibility matrix for various levels of implementation.
- KEPCO is responsible for effective implementation of EHS Management System at operational stage, through its contractual obligations. KEPCO is responsible for effective implementation of all the procedures at plant level. SMPCL also coordinates with the KEPCO staff by deploying key personnel at the plant;
- The overall responsibility of implementation of EHS procedures rests with the KEPCO's Plant Manager and DGM (Operations & Compliance) of SMPCL, who report to the Chief Operating Officer;
- EHS Committee has been formulated consisting of the General Manager, Deputy General Manager, EHS Manager, who are responsible for managing EHS related issues at the plant. EHS meetings are held on monthly basis. Records of Minutes of the meetings for Jan 2016, Feb 2016 and March 2016 were examined;
- EHS training is organised at regular interval as per the developed training schedules. Latest training record dated 10-Jan-16, was examined during this due diligence;
- EHS Training calendars for year 2015 and 2016 were reviewed. Topics pertaining to EHS training have been defined in the calendar, along with target group for the specific training and name of the identified trainer.
- SMPCL has developed a HIRA-AIIE register, where Hazards Identification and Risk Assessment (HIRA) and Aspect Identification and Impact Evaluation (AIIE) has been carried out. The potential hazards have been identified, risk has been evaluated and mitigation measures to be adopted are mentioned. Records dated 10-Jan-16 were checked.
- Personal Protective Equipment (PPEs) Matrix has been developed by SMPCL. As reported, PPEs distribution and requisition records is being maintained at the plant;
- SMPCL has developed Permit to work procedure, which details the precautions to be taken to ensure the safety of both personnel and plant. SMPCL has developed task specific Permit to Work system which includes cold work permit, hot work permit, working confined space permit, excavation work permit, working at height permit;
- Electrical Safety Programme, has been developed by SMPCL to comply with KEPCO KPS Electrical guide lines and OSHA regulations, the National Electrical Code, and other established safety standards to reduce or eliminate the dangers associated with the use of electrical energy;
- SMPCL celebrated EHS week from 23-Nov-15 to 26-Nov-15. As part of the celebration, SMPCL hosted a series of activities such as presentations for security personnel, drivers, office staffs & kitchen staffs, neighbouring plant representative, who were invited to visit the plant and join fire mock drill was arranged with Bangladesh fire service and civil defence team;
- As reported, daily EHS instruction system is installed at site to brief about daily EHS practices / precautions/ alerts to the employees working in various departments;
- As per the document review, the project has a valid Fire license issued by National Civil Defense the document dated 31-Dec-15 valid till 30-Jun-16 was scrutinised, As per the latest Annual Monitoring Report, Feb2016, SMPCL has installed portable fire extinguishers at strategic locations in the plant. Fire hydrant system is provided across the plant premises and automatic deluge system is provided for transformers and

fuel tanks. Reportedly, site has a dedicated Fire Building with one (1) fire tender and two (2) dedicated fire fighters. As reported, both the fire fighters are certified to drive heavy vehicles. The training on operation of the fire tender was provided by CNEEC;

- First Aid Room is being established in the fire building;
- As per the HIRA sheet and latest Annual Monitoring Report, Feb 2016, moving/rotating parts of the equipment at fire water pump house, acid storage etc. have no machine guarding around them, hence posing serious risk of injury;. No documentary evidence was furnished to exhibit that the gap identified had been closed.
- As per the information provided, SMPCL has a tie-up with third party to provide Ambulance services at the time of emergency and the surprise mock drill has been conducted by SMPCL to evaluate its effectiveness.
- SMPCL has also signed an agreement with M/s Royal Specialized Hospital & Diagnostic Centre located at Shonargoan, Narayanganj at the distance of 4.5 Km from the plant, however validity of the agreement cannot be verified from the document;
- Medical health check-ups are conducted for all employees and workers in every alternate year. Records for the year 2014 were furnished for review. Parameters such as vision, sugar level, blood, urine, lipid profile X-ray for chest, ultrasonography have been tested. The staff was found to be medically fit for working in the Plant.
- Monthly statistics for recordable injury, illness and Lost Time Accidents (LTA) are maintained at the project site by KEPCO. Recordable injuries have been defined under twelve (12) categories including accidents resulting in deaths, days away from work, medical treatment beyond first aid, unconsciousness, tuberculosis etc. Monthly working hours of contractors and employees are also maintained. Records were checked for year 2015. It was noted that the total number of working hours for year 2015 was 2,85,558 hours. It was recorded that there were no cases of fatal accidents, lost time and near-miss incident in year 2015.
- As per the latest Annual Monitoring Report, Feb 2016 for effective grounding of leakage current from the electrical systems, grounding is provided across the facility.
- Records were checked for EHS training on "Compressed Gas Cylinder Safety & Technical training on "Pump"

3.2.9 Status of Compliance to PS 2

Overall compliance with PS 2 is adequate, however, following non-compliances against IFC PS 2 have been observed during the assessment process:

- **Human Resource Management Policy and Procedure:** SMPCL has developed an "Employment Policy" which is applicable to all its probationary and full time employees. However, it is not applicable to the contract labour and security guards hired by SMPCL.
 - **Wages and Overtime:** As per the wage register ,overtime paid to the worker noted to be 1.5 times of the basic pay which is against the requirement of Bangladesh Labour Act, 2006 which is twice the ordinary rate of basic wage and dearness allowance;
 - **Workers' Organization:** SMPCL's HR policy does not mention of Company's intention of no objection on formation of worker's organization.
 - **Retrenchment policy:** SMPCL's HR policy does not talk about retrenchment.
- Occupational Health and Safety:** HIRA sheet and latest Annual Monitoring Report, Feb 2016, moving/rotating parts of the equipment at fire water pump house, acid storage etc. have no machine guarding around them, hence posing serious risk of injury;. No documentary evidence was furnished to exhibit that the gap identified had been closed.

3.2.10 Recommendations

- **HR Policy & Procedure:** SMPCL and KEPCO to revise the HR policy to include elements such as no objection on formation of worker's organization, retrenchment policy. The provisions in the HR policy and manual to be extended to third party workers i.e. any workers engaged in the Plant premises by or through contractors.
- **Machine Guarding:** HIRA sheet and latest Annual Monitoring Report, Feb 2016, moving/rotating parts of the equipment at fire water pump house, acid storage etc. have no machine guarding around them, hence posing serious risk of injury;. No documentary evidence was furnished to exhibit that the gap identified had been closed. Therefore, site Management to ensure that all moving and rotating machine parts are provided with guard having controlled access.
- **Overtime payment:** SMPCL to ensure that overtime paid to the workers engaged at the plant should meet the requirements of Bangladesh Labour Act, 2006 that is twice the ordinary rate of basic wage and dearness allowance.

3.2.11 Material Threshold

Considering the requirements of PS-2, none of observations made during the desk based ESDD are above the material threshold as defined in Section 1.4.

3.3 Performance Standard (PS) 3: Resource Efficiency and Pollution Prevention

3.3.1 Resource Efficiency

Requirement 20:

Resource Efficiency: The client will implement technically and financially feasible and cost effective measures for improving efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities. Such measures will integrate the principles of cleaner production into product design and production processes with the objective of conserving raw materials, energy, and water.

Observation 20:

SMPCL has developed EHS procedures to improve their environmental performance in terms of reducing their consumption of energy, water, as well as other resources and material inputs. Necessary design controls have been considered in the Plant components. The plant is designed for dual fuel, combined cycle operations, which conserves energy. The Heat Recovery Steam Generator (HRSG) is double pressure, de-aerated, unfired natural circulation boiler, and matched with PG9171 type gas turbine. The boiler is suitable for waste heat recovery of exhaust gas from gas turbine fired with natural gas or heavy oil. The HRSG consists of superheaters, evaporators, economizers and steam drums. Low NOx burners are provided inside the combustion chamber. The boiler strictly abides by ASME Code, Section I (2010 Edition & 11 Addenda). The exhaust gases from the gas turbine get discharged through a bypass damper which can be positioned to discharged the exhaust gas either through bypass stack into the atmosphere (during simple cycle mode) or to the HRSG (during combined cycle mode).

Requirement 21:

Greenhouse Gases: For projects that are expected to or currently produce more than 25,000 tonnes of CO₂ - equivalent annually, the client will quantify direct emissions from the facilities owned or controlled within the

physical project boundary, as well as indirect emissions associated with the off-site production of energy used by the project. The quantification of emissions should consider all significant sources of greenhouse gas emissions, including non-energy related sources such as methane and nitrous oxide, among others. Project-induced changes in soil carbon content or above ground biomass and project-induced decay of organic matter may contribute to direct emissions sources and shall be included in this emissions quantification where such emissions are expected to be significant.

Quantification of GHG emissions will be conducted by the client annually in accordance with internationally recognized methodologies and good practice. Such estimations will be done using recommended methodologies by the Intergovernmental Panel on Climate Change, various international organizations, and relevant host country agencies.

The client will consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GHG emissions during the design and operation of the project.

Observation 21:

SMPCL has maintained monthly records for CO₂ emissions resulting from burning of fuel. During this desktop assessment, records pertaining to CO₂ emission generation have been scrutinized for year 2014, year 2015, upto Feb 2016. Approximately 3, 44,099 tonnes and 3,65,845 tonnes of CO₂ equivalent were generated in year 2014 and 2015 respectively. The CO₂ emissions are accounted using USEPA factors for conversion.

Requirement 22:

Water Consumption: The client shall undertake an assessment to identify opportunities to avoid or reduce water usage so that the project's water consumption does not have significant adverse impacts on others.

Observation 22:

Steam turbines used with boilers and heat recovery steam generators(HRSG) used in combined cycle gas turbine units require a cooling system to condense steam used to generate electricity. Once-through cooling systems require large quantities of water which are discharged back to receiving surface water with elevated temperature of 7 ° C (As per the ESIA).

The main water source for both circulating cooling and auxiliary use is the Meghna River. SMPCL maintains records for the water intake and discharge of water into the river. Monthly records for the months of Jan, Feb and March 2016 have been shared by SMPCL. Total water consumption for the month of January, February and March 2016 was noted to be 4434cu.m, 16874cu.m and 28194 cu.m respectively. Months of Nov to Feb are lean months of power generation, where there was no power generation in the months of Dec 2015 and Jan 2016. Water Balance diagram was furnished for desktop assessment.

It is envisaged that there will be no impact on fish due to withdrawal of water from the river. A fish survey has been planned by the project (agency to be hired by June 2016) which will provide a detailed insight into the aspect.

3.3.2 Pollution Prevention

Requirement 23:

Pollution prevention-General: The client will avoid the release of pollutants or, when avoidance is not feasible, minimize and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts.

Air emissions: The primary emissions to air from the combustion of fossil fuels are sulfur dioxide (SO₂), nitrogen oxides (NO_x), particulate matter (PM), carbon monoxide (CO), and greenhouse gases, such as carbon dioxide (CO₂). The amount and nature of air emissions depends on factors such as the fuel (e.g., coal, fuel oil, natural gas, or biomass), the type and design of the combustion unit (e.g., reciprocating engines, combustion turbines, or boilers), operating practices, emission control measures (e.g., primary combustion control, secondary flue gas treatment), and the overall system efficiency. Measures to prevent minimize and control air emissions should be implemented.

Observation 23:

SMPCL undertakes regular environmental monitoring for the project at onsite and offsite locations for parameters such as ambient air quality (onsite and offsite), ambient noise levels (on monthly basis for onsite and offsite locations), wastewater discharge quality (monthly basis), river water and groundwater quality (quarterly basis). SMPCL has installed a Continuous Emission Monitoring System (CEMS) for monitoring of stack emissions NO_x, SO₂, CO₂ and particulate matters during operations.

Air emissions

SMPCL has a documented procedure on Environmental and Social Management Plan mandating monitoring of environmental parameters on monthly basis for reporting to DOE as well as for record keeping.

SMPCL has maintained an inventory of point and non-point sources of emissions within its premises. These include – 2 gas turbine stacks (point source) with 106.4 MW capacity which work on liquid fuel. The non-point sources include two Emergency Diesel generators, one auxiliary boiler and emissions from internal vehicle such as forklift and fire truck.

In order to comply with the conditions of the Environmental Clearance Certificate (issued in August 2013), SMPCL measures and maintain a record of SO₂, NO_x and CO levels in downwind direction of the plant where ground level concentration is considered to be high during operation phase and submit the results on quarterly basis to DoE. A third party agency, Adroit Environmental Consultants Ltd., was engaged for conducting monitoring of ambient air quality levels within plant premises. Related records were checked from Dec 2014 till Dec 2015. In between, in order to verify the results reported in the DOE report, experts from DoE visited the site in April 2015 and conducted fresh monitoring of parameters SO₂, NO_x and CO in down wind direction of the plant (i.e North east side, 30 m distance from dormitory) by conducting fresh monitoring. The values were found to be consistent with the values as stated in quarterly report submitted to DOE.

SMPCL, has also installed three high volume samplers for regular monitoring of ambient air quality (SO₂, NO₂, CO, PM₁₀, PM_{2.5} and Total Suspended Particles) during combined cycle operations) within the plant premises at - one each on jetty, on roof of dormitory building and cooling water forebay area. Records were reviewed for three months, September 2015 till November 2015.

SMPCL has installed a Continuous Emission Monitoring System (CEMS) for monitoring of stack emissions NO_x, SO₂, CO₂ and particulate matters during operations. The CEMS was commissioned in August 2015. Monthly reports are generated by KEPCO and submitted to SMPCL for review.

For offsite monitoring, SMPCL has installed one high volume sampler in village Mongolergoan since September 2015.

The monitoring results have been presented in table below.

Table 3-3: Comparative Analysis of Ambient Air Quality Monitoring Results – External Laboratories

Parameter	DoE Prescribed Limit (µg/m ³)	IFC Standard Limit (µg/m ³)	/ Pre development Baseline values (µg/m ³)	Post Operation Monitoring Values (µg/m ³)	Observations
Within project site boundary					
Particulate Matter-2.5 (PM 2.5)	65	75	7.3 - 16.7	64 - 115	Exceeded during the month of December, 2015 at North-East Corner (Main Gate) and South-East Corner (Boundary Area)
Particulate Matter-10 (PM 10)	150	150	12.0 - 92.0	47 - 167	Exceeded during the month of December, 2015 at North-East Corner (Main Gate) and South-East Corner (Boundary Area)
Suspended Particulate Matter (SPM)	200	-	35.8 - 193.0	66 - 306	Exceeded during the month of December, 2015 at North-East Corner (Main Gate) and South-East Corner (Boundary Area)
Sulphur Dioxide (SO ₂)	365	125	10.7	10 - 49	Values within prescribed limits.
Nitrogen Oxides (NO _x)	100	200	5.1 - 32.9	10 - 45	Values within prescribed limits.
Carbon Monoxide (CO)	1000	-	-	165 - 261	Values within prescribed limits.
North of the power plant in downwind direction					
Suspended Particulate Matter (SPM)	200	-	32.7 - 210.5	74	Values within prescribed limits. Monitored values within the range of baseline values.
Sulphur Dioxide (SO ₂)	365	125	7.0 - 8.3	Not detectable	Values within prescribed limits.
Nitrogen Oxides (NO _x)	100	200	6.2 - 23.3	28	Values within prescribed limits. Increase in post operation values as compared to baseline levels.
Offsite location - Dudhghata Village, located in North North West side of the plant					
Particulate Matter-2.5 (PM 2.5)	65	75	14.9 - 16.3	13 - 56	Values within prescribed limits. Increase in post operation values as compared to baseline levels.
Particulate Matter-10 (PM10)	150	150	12.0 - 170.6	55 - 91	Values within prescribed limits. Increase in post operation values as compared to baseline levels
Suspended Particulate Matter (SPM)	200	-	28.8 - 309.6	143 - 188	Values within prescribed limits. Increase in post operation values as compared to baseline levels.
Sulphur Dioxide (SO ₂)	365	125	7.8	12 - 27	Values within prescribed limits. Increase in post operation values as compared to baseline levels.

Parameter	DoE Prescribed Limit (µg/m ³)	IFC Standard Limit (µg/m ³)	Pre development Baseline values (µg/m ³)	Post Operation Monitoring Values (µg/m ³)	Observations
Nitrogen Oxides (NOx)	100	200	5.3 - 34.8	13 - 33	Values within prescribed limits. Slight increase in post operation values as compared to baseline levels.
Carbon Monoxide (CO)	1000	-	-	103 - 265	Values within prescribed limits.
Offsite location - Mongoler Gaon Village, located in North North East side of the plant					
Particulate Matter-2.5 (PM 2.5)	65	75	9.6	13 - 87	Exceeded the prescribed limits in May, 2015
Particulate Matter-10 (PM10)	150	150	17.3 -143.1	28 - 125	Values within prescribed limits.
Suspended Particulate Matter (SPM)	200	-	42.2 – 288.6	61 - 195	Values within prescribed limits.
Sulphur Dioxide (SO₂)	365	125	4	10 - 25	Values within prescribed limits.
Nitrogen Oxides (NOx)	100	200	6.7 – 33.5	11 - 33	Values within prescribed limits.
Carbon Monoxide (CO)	1000	-	-	111 - 277	Values within prescribed limits.

Table 3-4: Comparison of Monitored values with Predicted values (ESIA, 2013)

Offsite locations	Parameters	Predicted value as per AERMOD (µg/m ³)* done as the time of ESIA (2013)	Post operation monitored value (µg/m ³)	Observation
Dudhghata village	Particulate Matter-10 (PM10)	55.4	55 - 91	The predicted values fall within the range monitored for ambient air quality for all parameters
	Sulphur Dioxide (SO ₂)	29.2	12 - 27	
	Nitrogen Oxides (NOx)	21.71	13 - 33	
Mongoler Gaon village	Particulate Matter-10 (PM10)	56.1	28 - 125	
	Sulphur Dioxide (SO ₂)	25.4	10 - 25	
	Nitrogen Oxides (NOx)	22.31	11 - 33	

Note:

* GLC values at both these villages were not computed during the ESIA study. However average GLC values have been added to the baseline data to achieve the resultant GLC

For monitoring of emissions from stacks of HRSG-1 and HRSG-2, SMPCL has installed a Continuous Emission Monitoring System (CEMS) to monitor NOx, SO₂, CO₂, particulate matters, temperature, oxygen, humidity etc. The CEMS was commissioned in August 2015. Monthly reports are generated by KEPCO and submitted to SMPCL for review. Records for both the HRSG systems were reviewed for August to November 2015 were reviewed during the

desktop assessment. The results indicate that all parameters are well within the prescribed limits except particulate matter values which exceed the prescribed limits in the month of December 2015.

SMPCL has provided four (4) 12-seater buses for daily commuting by employees. Apart from this, there are four (4) four-wheelers outsourced from a travel agency. All the vehicles were observed to have valid fitness certificates from authorized agency.

As reported, paved roads have been provided inside the premises, which minimize dust generation due to moving vehicles.

Noise

Onsite ambient noise levels are monitored by SMPCL on monthly basis using Sound Level Meter at seven locations within the plant premises.

- North eastern boundary -1 (Near Dormitory building)
- North eastern boundary – 2
- South eastern boundary (Beside light diesel oil (LDO) tank)
- South boundary -1 (Near boundary of jetty area)
- South boundary -2 (near DG area)
- South western boundary (near Switchyard)
- North western boundary

Results for onsite monitoring conducted from Jan 2015 up to Nov 2015 show that the day time noise levels range from 46 - 68.4 db(A) (LeQ values) while night time levels ranged from 45.6 - 68 db(A) (LeQ values) within the plant premises. All levels were observed to be within the prescribed limits of DoE and IFC.

Offsite noise monitoring was initiated in April 2015 and is conducted on monthly basis at two offsite locations by SMPCL staff using Sound Level Meter. In April 2015, the noise levels were monitored at the nearby two villages Pachani and Char Bolokia. However from May onwards, up to Nov 2015, the levels are monitored at nearby Ganganagar and Dudhghata villages. The frequency of monitoring was noted to be regular at the offsite locations. Records were examined for the months of Jan 2015 till Nov 2015. Results for offsite monitoring show that day time noise levels at Ganganagar village range from 48.4 - 54 db(A) while night time levels ranged from 40 - 48.4 db (A). The night time noise level at Ganganagar was observed to be slightly exceeding the IFC limits. The high noise levels could be attributed to the fact that Ganganagar village is situated next to the busy Dhaka - Chittagong highway which has very high vehicular movement throughout the day. The noise levels at Dudhghata village were observed to be within limits.

Water

Water quality monitoring prior to construction

Surface and groundwater monitoring was undertaken during ESIA study to establish the baseline conditions prior to development of the project. Eight (8) surface water samples were collected from Meghna River around the plant site while six (6) groundwater samples were collected from the plant site and from surrounding villages. The period of sample collection was from March – June 2012.

Post Operation Monitoring

SMPCL undertakes quarterly laboratory analysis of water samples taken from river and groundwater in compliance to the monitoring requirement.

Table 3-4: Summary of the Water Quality Results

Parameter	Pre-development Baseline Values	Post Operation Monitored Values	DoE Prescribed Limit	IFC Standard Limit
<i>Surface Water Quality</i>				
pH at 24.1°C	6.5	7.1 - 7.48	6 to 9	6 to 9
TSS (mg/l)	11	less than 5 mg/l - 44.8	150 mg/l	-
EC (µS/cm)	82	54.8 - 206	1200 µS/cm	-
DO (mg/l)	5.9	5.03 - 7.1	4.5 - 8 mg/l	-
COD (mg/l)	Less than 5	3.92 - 7.8	200 mg/l	125 mg/l
BOD (mg/l)	Less than 2	1.2 - 3.03	50 mg/l	30 mg/l
Turbidity (NTU)	18.8	2.47 - 11.9	10 NTU	-
Total Dissolved Solids (TDS) (mg/l)	56	35.2 - 117	2100 mg/l	-
<i>Ground Water Quality</i>				
pH at 24.1°C	7.2	6.75 - 7.25	-	-
Total Alkalinity (as CaCO ₃) (mg/l)	NA	146 - 209	-	-
Manganese (Mn) (mg/l)	0.25	0.24 - 2.0	-	-
Nitrate-Nitrogen (NO ₃ -N) (mg/l)	3.42	Less than 1.0 - less than 3.0	10 mg/l	-
Total Hardness as CaCO ₃ (mg/l)	159.36	172 - 275	200 - 500 mg/l	-
Chloride (Cl) (mg/l)	47.05	1.11 - 176	-	-
Arsenic (As) (mg/l)	0.11	less than 0.005 - 0.478	-	-
Iron (Fe) (mg/l)	0.4	0.76 - 6.33	0.3 - 1.0 mg/l	-
Total Dissolved Solids (TDS) (mg/l)	296	230 - 666	1000 mg/l	-
Lead (Pb) (mg/l)	0.04	less than 0.01 - 0.015	-	-
Turbidity (NTU)	4.52	2.57 - 43.7	-	-

As per the monitoring records furnished (table above), ground water quality parameters were well within the standards of DoE and IFC except the ferrous ions concentration which was noted for Jan2015, to be more than six times the DoE prescribed upper limit. Iron content in groundwater also exceeded the limit in October 2015. This can be attributed to the significantly high concentrations of naturally occurring ferrous ions (iron) in groundwater aquifers in rural areas of Bangladesh (including Narayanganj district where the plant is located). Besides this, no such onsite activities were reported in the previous audit reports that could contribute to high iron levels in the groundwater.

The turbidity of both surface and ground waters were observed to be high in the month of October 2015, and could be due to the end of monsoon season in the region.

It was recommended during previous assessments that SMPCL should ensure that water samples are undertaken from the surface aquifer from a bore well which may be of new construction (may be locally available) or may have PVC casing. It was reported that a new bore well with PVC casing was installed within the plant premises in September 2015. The laboratory results for October 2015 show lower value of iron ions concentration as compared to the previous recorded value. However, the reason behind the trend of iron concentration in all

the four reports was unclear which could apparently be an analytical error on the part of the laboratory. It is therefore, recommended that groundwater sample should be analysed by engaging a different third party laboratory to rule out analytical errors, if any.

Requirement 24:

Thermal Discharges: As per IFC’s EHS Guidelines for Thermal Power Plants: Effluents, Thermal power plants with steam-powered generators and once-through cooling systems use significant volume of water to cool and condense the steam for return to the boiler. The heated water is normally discharged back to the source water (i.e., river, lake, estuary, or the ocean) or the nearest surface water body. The client will implement measures to prevent, minimize and control thermal discharges.

Observation 24:

As part of the ESIA, SMPCL undertook a software modelling exercise using MIKE 3 Flexible Mesh (FM) to assess the extent of thermal plume dispersion in river Meghna at the water outfall. It was found out that the incremental rise in temperature due to the outfall will be within the standard prescribed by Department of Energy, Bangladesh and thus will not have any significant impact on the river quality and ecosystem.

The thermal plume dispersion modelling exercise has been conducted for the project which suggests that there will not be any loss of habitat due to discharge of cooling water. The modelled values for incremental rise in temperature due to the outfall were found to be well within the set standards of Department of Environment, Bangladesh. The predicted temperature is below 40°C. The increase in temperature observed is small and limited to a very small area also.

As mentioned in the ESIA report, local fishermen are engaged in kata/ pulse fishing¹ in Meghna river around Sonargaon. To assess the impact on fish number due to cooling water discharge at the project outfall, a fish survey has been suggested to be undertaken in first year of operation of combined cycle. As reported, SMPCL has identified survey agencies to carry out the study and intends to complete it by May 2016.

SMPCL measures the river water intake temperature and river water outlet temperature on a daily basis. Records were examined from May 2014 through Oct 2015, and have been summarized below:

Table 3-5: Temperature Monitoring Records

S. No.	Monitoring period	River Water Inlet temp (Average)	River water outlet temp (Average)	Temperature Range (°C)	Average Difference (°C)
1	May 2014	30.17	32.3	22.7- 34.0	1.98
2	October 2015	31.7	33.8	30.14- 35.0	2.81

The incremental temperature recorded for summer season is 1.98°C and winter season is 2.81°C in compliance with IFC-WB thermal discharge guidelines. The temperature difference is also within the range as predicted in thermal plume modelling.

¹ *Kata is a local word which means a kind of encroached area for making a habitat for fish for a short period of time in the river and later on fisherman catch these fishes.*

Requirement 25:

The Client will monitor wastewater sources of the project and water quality of each wastewater stream (Thermal Discharge, Liquid Waste and Sanitary Wastewater).

Observation 25:

SMPCL also records the volume of treated effluent discharged (after meeting the desired norms) into the river on daily basis. It was reported that about 15,452.89 m³ of treated effluent have been discharged into the river from the start of operations (simple cycle) up to November 2015. Effluent discharge records of Jan, 2016 shows that average daily discharge is approximately 18m³.

An ETP has been installed on site to treat the process effluent generated from the plant such as clarifier mud, backwash water of Activated carbon filters (ACF) and Activated Sand Filter, DM wastewater, etc. to required standard.

SMPCL tests the treated effluent in the in-house laboratory at site prior to discharge into the River. The parameters which are tested weekly include pH, temperature, conductivity, turbidity and DO. BOD and COD values were monitored on monthly basis. Testing records for the months of Feb 2015 through Oct 2015 were reviewed and were found to be under DoE prescribed limits. DoE-approved laboratory, Bangladesh Council of Scientific and Industrial Research (BCSIR) was engaged during this time.

Table 3-6: Summary of the Treated Wastewater Quality Results

Parameter	Concentration	Concentration	IFC Standard Limit
pH	6.75 - 7.52	6 to 9	6 to 9
BOD at 200C (mg/l)	0.24 - 10	50	30
TDS (mg/l)	52 - 103	2100	-
COD (mg/l)	2 - 28	200	125
DO (mg/l)	5.8 - 8.01	4.5 - 8	-
TSS (mg/l)	5.2 - 40.8	150	50

As reported, a sewage treatment plant (STP) of capacity 20 KLD has been installed for treatment of domestic sewage generated from the central control building and dormitory building and was reported to be functional during previous site audits. It was reported that treated wastewater from the STP is used for gardening purposes within the plant. The storage tank of the STP is cleaned on annual basis through the services provided by the urban local body of the area.

Requirement 26:

The client will avoid the generation of hazardous and non-hazardous waste materials. Where waste generation cannot be avoided, the client will reduce the generation of waste, and recover and reuse waste in a manner that is safe for human health and the environment. Where waste cannot be recovered or reused, the client will treat, destroy, or dispose of it in an environmentally sound manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material.

As per the IFC's EHS Guidelines, Thermal Power Plants, Coal-fired and biomass-fired thermal power plants generate the greatest amount of solid wastes due to the relatively high percentage of ash in the fuel. Ash residues are not typically classified as a hazardous waste due to t

their inert nature. However, where ash residues are expected to contain potentially significant levels of heavy metals, radioactivity, or other potentially hazardous materials, they should be tested at the start of plant operations to verify their classification as hazardous or non-hazardous according to local regulations or internationally recognized standards.

Observation 26:

SMPCL has developed and implemented a procedure on waste management. The procedure provides classification of waste, safety wear to be used during handling of waste, roles and responsibilities, method of waste collection, storage and disposal plans for chemical waste, non-hazardous waste and hazardous waste. The Plan also suggests recycling and waste reduction to the extent possible.

As per the records reviewed, colour coded bins are placed in the plant premises for storage of different types of solid wastes. The details are as follows:

- Green coloured bins - for general refuse;
- Red coloured bins - for recyclable waste such as plastic and glass;
- Black coloured bins - for hazardous wastes such as oily rags;
- Hazardous wastes such as oily filters, used oil and used oil drums are stored within the site in a designated area with proper labelling and restricted access.

SMPCL generates wastes which may be classified as – hazardous waste (used oil/ oily rags, oily saw dust and similar waste), general waste (paper, plastic, cardboard, bricks and other similar waste) and medical hazardous/ infectious waste (from first aid room). As per the reviewed records for the year 2015 and 2016, it was noted that on an average, the Plant generates approximately 50 kgs of kitchen waste, 2 kgs of paper and plastic, 0.5 kg biomedical waste and 25 kg of hazardous waste per month. For collection and disposal of non-hazardous general waste and oil-contaminated wastes (including kitchen waste oil, used oil filters), SMPCL has a formal agreement with M/s Tania Enterprise dated 11th March, 2014. M/s Tania has obtained approval from Sonargoan Municipality for disposing of general municipal wastes at their designated disposal site. M/s Tania Enterprises also holds a valid license for collection and disposal of hazardous waste from Department of Environment (DoE) dated 14th December 2015, valid up to 8th September 2016. As reported, M/s Tania further sells the hazardous waste to another DoE approved hazardous waste handler M/s Year Enterprise brickfield. It was noted during the assessment that M/s Year Enterprise have a valid DoE license to dispose hazardous waste. SMPCL retains copy of receipt of sale of hazardous waste to the brickfield by M/s Tania, as verified through challan dated 28th Nov 2015 for sale of 34 pieces of used oil filters.

The Biomedical waste generated from the medical centre is disposed of through M/s Prism Bangladesh Foundation, who is an authorised agency for biomedical/ pharmaceutical waste collection and disposal and operates an incineration plant at Matuail, Dhaka. As per the records reviewed, about 2 kg of biomedical waste was generated in the year 2015. A copy of the contract between M/s Prism and SMCPL was furnished for review. It was observed that the contract had a validity upto 9th March 2016. Hence, the agreement has expired. As reported by the site representative, SMPCL is in process of renewing the agreement with M/s Prism but due to unavailability of the signing authority of prism, the agreement has not been updated till the issuance of the report.

Monthly records for total waste generation and total waste disposed of through the vendors, along with breakup of quantities of different waste streams (general, medical, hazardous) are maintained by KEPCO. The records maintained for the year 2015, till Feb 2016 were reviewed during this assessment.

Requirement 27:

The client will avoid or, when avoidance is not possible, minimize and control the release of hazardous materials. In this context, the production, transportation, handling, storage, and use of hazardous materials for project activities should be assessed.

Observation 27:

To control and minimise possible release of a hazardous material, SMPCL has formulated certain mechanisms which includes Spill Prevention and Response Plan and Spill and Release Reporting Procedure for management of hazardous spills such as high-speed diesel (HSD) from storage tanks, during unloading at the jetty, near emergency DG sets, etc. As reported, a manually operated oil boom has been provided at the jetty area for spill containment during unloading of fuel from oil tankers.

The fuel storage area has been provided with dykes, which have capacity to contain spills equivalent to the full storage capacity.

SMPCL has also developed and implemented an emergency response procedure for dealing with emergency scenarios such as fire & explosion, chlorine leakage, flood, earthquake, electrical shock, etc. Periodic mock drills are conducted and records of such mock drills records were verified during this desktop assessment (Refer to Section 3.1.4 PS-1 Requirement 5 Training).

Photographic evidence provided by the client establishes that there is a provision of secondary containment at the hazardous material storage area, acid storage area and fuel tank area to prevent spillage of oil and chemicals to the ground.

As reported, a dedicated fire tender is stationed at the site, along with two trained fire fighters. All firefighting systems and emergency equipment are inspected on regular basis by KEPCO and monitored by SMPCL. Four (4) assembly points have been demarcated at site, which are as follows:

- near Central Control Room;
- in front of Central Control building;
- near main gate;
- near jetty area

As reported, sign boards have been provided at appropriate places within the site. Alarms/ hooters and public address system have been provided throughout site, and were reported to be functional.

For the fuel storage area, hazard analysis and risk assessment has been carried out. As reported in previous audit reports, engineering controls such as dyke design, fire prevention system and fuel-oils separation have been implemented at site.

As reported, SMPCL has displayed emergency contact numbers, such as nearest hospitals and police station, fire station, District administration at strategic locations within the Plant.

Requirement 28:

Pesticide Use and Management - The client will not purchase, store, use, manufacture, or trade in products that fall in WHO Recommended Classification of Pesticides by Hazard Class Ia (extremely hazardous); or Ib (highly hazardous). The client will not purchase, store, use, manufacture or trade in Class II (moderately hazardous) pesticides, unless the project has appropriate controls on manufacture, procurement, or distribution and/or use of these chemicals.

Observation 28:

During review of plant layout drawing, it has been noted that bamboo grass is planted within the plant premises is under landscaping .It was confirmed by the client, that no pesticides is being used for the land scaping.

3.3.3 Status of Compliance to PS-3

Overall compliance with PS 3 is adequate, however, following non-compliances against IFC PS 3 have been observed during the assessment process:

- **Pollution Prevention:** The results of the quarterly laboratory analysis of water samples taken from river (Jan 2015) and groundwater showed higher iron concentration levels than the prescribed IFC and DOE standards. This can be attributed to the significantly high concentrations of naturally occurring ferrous ions (iron) in groundwater aquifers in rural areas of Bangladesh (including Narayanganj district where the plant is located). Besides this, no such onsite activities were reported in the previous audit reports that could contribute to high iron levels in the groundwater.
- **Waste Management:** Agreement for the biomedical handling and disposal between SMPCL and M/s Prism Bangladesh Foundation is noted to be expired on 9th March 2016.

3.3.4 Recommendations

- **Pollution Prevention:** SMPCL should verify the laboratory chemical testing results for iron ion concentration in groundwater sample, which was found to be much higher than the DOE allowable limit (Jan 2015 and Oct 2015 results), by engaging a different third party laboratory to rule out analytical errors, if any.
- **Waste Management:** SMPCL should have a contract with DOE approved agency for disposing biomedical infectious waste or renew their contract with their existing service provider, M/s Prism Bangladesh Foundation, which expired on 9th March 2016.

3.3.5 Material Threshold

Considering the requirements of PS-3, none of observations made during the desk based ESDD are above the material threshold as defined in Section 1.4

3.4 Performance Standard (PS) 4: Community Health Safety and Security

3.4.1 Infrastructure and Equipment Design and Safety

Requirement 29:

The client will design, construct, operate, and decommission the structural elements or components of the project in accordance with GIIP (good international industry practice), taking into consideration safety risks to third parties or Affected Communities.

The structural elements will be designed and constructed by competent professionals. The structural elements will be certified or approved by competent authorities or professionals.

When structural elements or components, such as dams, tailings dams, or ash ponds are situated in high-risk locations, and their failure or malfunction may threaten the safety of communities, the client will engage one or more external experts with relevant and recognized experience in similar projects, separate from those responsible for the design and construction, to conduct a review as early as possible in project development and throughout the stages of project design, construction, operation, and decommissioning.

Observations 29:

As mentioned previous section of the report, the Project is spread across an area of 25 acres of land which is part of a larger developed area known as Meghnaghat Power Sites Area (MPSA). As per the socio-economic study carried Plant as part of the ESIA process, there are seven villages near the Plant location and all the villages are located approximately at a distance of 2.5 km Power Plant.

There are seven (7) fuel tanks for storing of HSD. (2 X 7000 cu.m capacity and 5X 2000 cu.m) within the project premises in the geographical south direction. These tanks have been constructed away from the plant boundary so as to reduce safety risk to the nearby community in case of any failure or accident associated with fuel storage tank.

SMPCL has also carried out a Hazard assessment and Risk Analysis (HIRA) of the fuel storage area. Emergency scenarios have been identified in the emergency management procedure. Emergency sirens have been provided inside the facility which gives warning signals to the nearby community.

As reported in the earlier assessment reports, SMPCL has also developed a floating jetty at the south eastern corner of the project site for the purpose of diesel transfer, which is supplied in large vessels of 1000 MT capacity at the floating jetty. This reduces the environmental impact due to construction activities associated with development of a fixed jetty.

3.4.2 Hazardous Materials Management and Safety

Requirement 30:

The client will avoid or minimize the potential for community exposure to hazardous materials. Exercise commercially reasonable efforts to control the safety of deliveries of hazardous materials, and of transportation and disposal of hazardous wastes, and will implement measures to avoid or control community exposure to pesticides.

Observations 30

SMPCL has developed a Spill Prevention and Response Plan and Spill and Release Reporting Procedure for management of hazardous spills such as high speed diesel from storage tanks, during unloading at the jetty, etc. It was reported that a manually operated oil boom has been provided at the jetty area for spill containment during unloading of fuel from oil tankers and no case of spillage has been reported in the past.

SMPCL has developed and implemented a procedure on waste management. The procedure provides classification of waste, safety wear to be used during handling of waste, roles and responsibilities, method of waste collection, storage and disposal plans for chemical waste, non-hazardous waste and hazardous waste. The Plan also suggests recycling and waste reduction to the extent possible.

SMPCL has also developed Waste Management procedure and caustic, acid, chlorine handling, storage and disposal procedure which details the procedure to storage, handling and disposal of hazardous material to minimize community exposure.

3.4.3 Ecosystem Services

Requirement 31:

Where appropriate and feasible, the client will identify those risks and potential impacts on priority ecosystem services that may be exacerbated by climate change. Adverse impacts should be avoided, and if these impacts are unavoidable, the client will implement mitigation measures. With respect to the use of and loss of access to provisioning services, clients will implement mitigation measures.

Observations 31

SMPCL carried out a plume modelling using MIKE 3 Flexible Mesh (FM) to assess the incremental rise in temperature due to the outfall. The incremental rise in temperature was found to be within the limits prescribed by the Department of Environment, Bangladesh and thus does not have any significant impact on the river quality and ecosystem. The river water temperature is measured daily at the outfall point (50 m downstream), and records are maintained by SMPCL.

In order to assess the loss in fish catch in the Meghna River due to cooling water discharge into the river, SMPCL has identified agencies to carry out the survey and intends to complete the exercise by May 2016.

3.4.4 Community Exposure to disease

Requirement 32:

The client will avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases, and communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. Where specific diseases are endemic in communities in the project area of influence, the client is encouraged to explore opportunities during the project life cycle to improve environmental conditions that could help minimize their incidence.

The client will avoid or minimize transmission of communicable diseases that may be associated with the influx of temporary or permanent project labour.

Observations 32:

None of the activities carried out at Plant premises has potential for community exposure to water borne, water based and communicable diseases.

3.4.5 Emergency Preparedness and Response

Requirement 33:

The client will assist and collaborate with the Affected Communities, local government agencies, and other relevant parties, in their preparations to respond effectively to emergencies, especially when their participation and collaboration are necessary to respond to such emergencies.

The client will document its emergency preparedness and response activities, resources, and responsibilities, and will disclose appropriate information to Affected Communities, relevant government agencies, or other relevant parties.

Observations 33

An Emergency Management Procedure has been developed by SMPCL which details the procedure of evacuation during any emergency situations like Fire & Explosion, Chlorine Release, Failure of structures, etc. Evacuation to be carried out with the help of Local project affected people (PAP) committee, police department and fire department. Reportedly, chlorine is being stored in 4 to 5 tonners.

As reported, there are seven (7) fuel tanks for storing of HSD. (2 X 7000 cu.m capacity and 5X 2000 cu.m) within the project premises in the geographical south direction. It was observed in the Annual Monitoring Report, 2016 that vulnerable zones of impact in case of chlorine leakage was not identified by SMPCL nor included in the Emergency Response Procedure. However updated Emergency Response Procedure includes identification of vulnerable zones (i.e. villages and surrounding industrial units) upto 7.4 km radius from the chlorination building of SMPCL plant and response measures to be taken in case of chlorine leaks. It was reported that emergency response plan to be followed incase of any accident related to chlorine is communicated to the nearby community

As reported in the Annual Monitoring Report 2016, laminated leaflets have been displayed in the nearby seven villages, primary school in Bolokia Char village and community gathering place in Islampur village. The leaflets mention information about the grievance redressal procedure, emergency response plan, along with key contact numbers.

The procedure has been prepared for both onsite and offsite emergencies. Emergency sirens are provided inside the facility, which gives warning system to the nearby community. HSE Manager and Incident Commander (IC) conducts an annual meeting with PAP committee, Fire Department representative (if possible) and police department representative (if possible) to discuss issues related to community emergency response. Records of such meeting have been reviewed.

3.4.6 Security Personnel

Requirement 34:

When the client retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by its security arrangements to those within and outside the project site. In making such arrangements, the client will be guided by the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of such workers, and by applicable law.

The client will assess and document risks arising from the project's use of government security personnel deployed to provide security services. The client will consider and, where appropriate, investigate all allegations of unlawful or abusive acts of security personnel take action (or urge appropriate parties to take (action) to prevent recurrence, and report unlawful and abusive acts to public authorities.

Observations 34

SMPCL has formulated Security Policy and Procedure which details out security arrangements at the Plant site and prescribes the process to be followed in case of any emergency or unlawful activities by the security personnel.

Reportedly, SMPCL has engaged 38 security personnel at site through M/s Falcon Security Limited to safeguard the life and property. The Annual Monitoring Report, 2016 about 8-10 armed security staff, from government security agency Bangladesh Ansar were reported to be deputed by CNEEC till the formal hand over of the project.

These personnel work in three shifts on rotational basis. Falcon provides general training to the security personnel on rules of conduct, dealing with the locals and other related issues. SMPCL conducts fire drill and mock drill for the security staff. SMPCL conducts annual EHS week for plant employees and third party workers, wherein the security personnel are provided with training on behavioral guidelines for personnel handling.

As per the previous reports reviewed, there have been no incidents recorded where security personnel were involved.

3.4.7 Status of Compliance to PS-4:

With respect to observations noted during the document review, the project is compliant with PS-4 and no issues pertaining to Community health and safety have been recorded.

3.4.8 Recommendations

- None

3.4.9 Material Threshold

Considering the requirements of PS-4, none of observations made during the desk based ESDD are above the material threshold as defined in Section 1.4

3.5 Performance Standard (PS) 5: Land Acquisition and Involuntary Resettlement

3.5.1 Land acquisition and resettlement

Requirement 35:

The client will consider feasible alternative project designs to avoid or minimize physical and/or economic displacement (*), while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable. (*) *Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) because of project-related land acquisition and/or restrictions on land use.*

When displacement cannot be avoided, the client will offer displaced communities and persons compensation for loss of assets at full replacement cost and other assistance to help them improve or restore their standards of living or livelihoods.

Observation 35:

The Project is spread across an area of 25 acres of land which is part of a larger developed area known as Meghnaghat Power Sites Area (MPSA). Bangladesh Power Development Board (BPDB) developed this area for siting of power generation plants.

Reportedly¹, prior to the land acquisition in the year 1999 the land was used was used for agriculture purpose and there were case of economic displacement occurred .Baseline surveys indicate that BPDB development of the project site resulted in the physical displacement and resettlement of four households for the entire MPSA². Resettlement Action Plan (RAP) was made and fair compensation was made to the affected people.

However, based on the secondary data search and goggle imagery (dated 14-Sep-2002) it was noted that houses that were resettled does not falls within the SMPCL premises.

As understood from ESDD conducted in year 2013, land acquisition for the Project was undertaken in the year 1995 -1999. The rate at which the land was acquired was approximately 4000 Taka/ Decimal (1 decimal = 435 sq. ft.), which was reportedly lesser than the replacement value

The registration fee on any land procured by land user was also waived off. The land when transferred to SMPCL was devoid of any habitation or significant vegetation. Therefore, this aspect of PS does not attract any monitoring requirements.

¹ Annual Environmental and Social Compliance Report, April 2015 by Infrastructure Development Company Limited and ² EIA of a gas turbine power project.

3.5.2 Status of Compliance to PS-5:

With respect to observations noted during the document review, PS-5 does not get triggered.

3.5.3 Recommendations

- None

3.5.4 Material Threshold

Considering the requirements of PS-5, none of observations made during the desk based ESDD are above the material threshold as defined in Section 1.4.

3.6 Performance Standard (PS) 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

3.6.1 Protection and Conservation of Biodiversity

Requirement 36:

The client will avoid impacts on biodiversity and ecosystem services. When avoidance of impacts is not possible, measures to minimize impacts and restore biodiversity and ecosystem services should be implemented. Client will consider direct and indirect project-related impacts on biodiversity and ecosystem services and identify any significant residual impacts in the ESIA.

The client should minimize possibilities of habitat destruction including modified, natural, and critical habitats.

If the project is located within legally protected areas, the client to act in a manner consistent with the protected area management plan, consult stakeholder on the project and implement additional programme to promote and enhance conservation aims.

Observation 36:

As per the case study by an Environment & Development Adviser conducted in the year 2003 for MPSA - "Prior to site development, the MPSA was utilized for the seasonal production of rice, wheat, pulses, oilseeds, eggplants, tomatoes, sweet, potatoes, and watermelon. Extensive agricultural, industrial, and residential developments have significantly altered the natural habitats within the project region. No vulnerable, threatened, or

endangered (VTE) floral species have been identified at the MPSA. Published data indicate there may be habitat for vertebrate VTE species (e.g., avian, mammalian, and reptilian species) within a ten-kilometer radius of the MPSA, but no such habitat was found on the project site through field checking during case study”.

Also, an assessment of ecological impact has been undertaken as part of ESIA study for SMPCL which states that the project site is devoid of any significant vegetation or faunal population.

A fish survey has been conducted as a part of ESIA report (year 2013). A wide range of fish species were observed in the study area (upstream and downstream of main Meghna river and River channel. The most common fish species of this river include Rui, Katla, Ayre, Hilsa, Kalbasu, Bacha, Chewa, Gharua, Kaski, Chapila, Kajoli, Prawn, Eel, Puti, Boal, etc. Chewa, Puti, Rui, Katla, Ayre, Boal, Kaski, Bacha, Kajoli, The thermal plume dispersion modelling exercise suggests that there will not be any loss of habitat due to discharge of cooling water. The incremental rise in temperature due to the proposed outfall were within the set standard of Department of Environment, Bangladesh. The predicted temperature is below 40°C. The increase in temperature observed is small and limited to a very small area also.

The outlet temperature of cooling water is measured and recorded on regular basis by SMPCL and is observed to be within prescribed limits. (As detailed in Section 3.2.2).

As per the Plume Modelling Report conducted in April, 2013, pulse fishing is a common practice engaged by the local fishermen in Meghna River around Sonargon.

The increase in temperature, as identified from the modeling exercise, remains less than one degree for most of the area. An area of less the one square kilometer (0.85 approximately) towards the North West to North of the outfall will experience an increase in temperature between 1 and 1.5 degrees (marginally above).

The impact from the proposed outfall is considered to be low because of the following factors:

- The pulse fishing process provides artificial habitat for the fishes, wherein the food availability is ensured by the fishermen. This prevents the fishes from moving away to less attractive habitats. It is also observed that Pulse fishing is being successfully undertaken around existing outfall of the 450MW plant, which is in operation. A monitored change in temperature of 1.2 degrees is observed around the existing outfall, which suggests that there is limited impact from increase in temperatures.
- The vulnerability of the fishes to fluctuation in temperature less than 1.5 degrees is assessed to be low as the range of fluctuation is within the normal daily temperature fluctuation of the river water.

In order to assess the loss in fish catch in the Meghna River due to cooling water discharge into the river, SMPCL has identified agencies to carry out the survey and intends to complete the exercise by May 2016.

The project is not located within legally protected areas. The project does not have any major impact on biodiversity and ecosystem services.

3.6.2 Status of Compliance to PS-6

With respect to observations noted during the document review, the project is compliant with PS-6. A fish survey has been conducted as a part of ESIA report (year 2013). A fresh fish survey has also been planned to be undertaken by May 2016 to ascertain the impact on fish number and availability due to discharge of cooling water in river water.

3.6.3 Recommendations

None

3.6.4 Material Threshold

Considering the requirements of PS-6, none of observations made during the desk based ESDD are above the material threshold as defined in Section 1.4

3.7 Performance Standard (PS) -7: Indigenous People

3.7.1 Indigenous communities

Requirement 37:

Client to avoid impacts on indigenous communities, to the extent feasible, and where not, mitigate or compensate in a culturally appropriate manner. Client to develop an ongoing relationship with such communities through the life of the project, involving their representatives (e.g. council of elders) and inclusive of women and men and allowing them time for collective decision making. Client to safeguard cultural heritage of indigenous people

Observation 37:

The population of indigenous communities in Narayanganj district is limited. Owing to the small scale of plant operations, no direct social risks to the community at large, including the indigenous community if any, were identified. PS 7 does not get triggered.

3.7.2 Status of Compliance to PS-7:

As per the project documents furnished, no indigenous communities are reported by local community and the project representatives. PS 7 does not get triggered.

3.7.3 Recommendations

- None

3.7.4 Material Threshold

Considering the requirements of PS-7, none of observations made during the desk based ESDD are above the material threshold as defined in Section 1.4

3.8 Performance Standard (PS) - 8: Cultural Heritage

3.8.1 Cultural Heritage

Requirement 38:

Client will avoid removing cultural heritage unless there are no alternatives, and benefits outweigh costs. Client will implement chance find procedures established through the ESA process wherever necessary. Client will consult with the affected communities who use or have used the cultural heritage.

Observation 38:

There are no sites of cultural or religious importance at site or its immediate vicinity. Inference may be made from the existing construction/ excavation activities carried out for existing plants around the area where no such cases

appeared. It may be concluded that there is no possibility of chance find. Therefore, Performance Standard 8 does not get triggered in this case.

3.8.2 Status of Compliance to PS-8:

The project is already under operation phase with no possibility of any further excavations; Performance Standard 8 does not get triggered in this case.

3.8.3 Recommendations

- None

3.8.4 Material Threshold

Considering the requirements of PS-8, none of observations made during the desk based ESDD exceed the material threshold as defined in Section 1.4.

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The present section delineates the list of actions required to be undertaken by the management to ensure closure of the gaps as identified in Section 3.0 of the report. The Corrective Action Plan is provided below with timelines, responsibilities and specific action items.

The gaps are categorised as red, orange and yellow flag issues based on the severity of impact on the EHS and Social aspect:

Flags	Remarks
Red Flag Issues	These are observations which pose high impact on the environment, health, safety and social aspects and may have legal implications.
Orange Flag Issues	These are observations which pose moderate impact on the environment, health, safety and social aspects.
Yellow Flag Issues	These are observations which pose low or least impact on the environment, health, safety and social aspects.

Table 3-7: Summary of Findings and Recommendations - SMPCL

S. No.	Applicable Performance Standard	Issue Identified	Summary of Issues	Flag	Proposed Action Plan	Budget and Resource	KPI Responsibility and	Timeline (from date of finalization of this report)
1.	PS-1	Revision of EHS Policy	<ul style="list-style-type: none"> It is not clear whether the HSE Policy is reviewed on bi-annual basis as has been recommended in the EHS inspection calendar since the amendment sheet of the policy document does not indicate the date of review and revision, if any. 	Yellow	<ul style="list-style-type: none"> SMPCL to update the date of revision, if any, of HSE policy and EHS Management procedures. 	-	Updated HSE Policy with date and version mentioned. DGM (O&C)	One month
2.	PS-2	HR Policy & Procedure	<ul style="list-style-type: none"> SMPCL's HR policy does not mention of Company's intention of no objection on formation of worker's organization and retrenchment policy 	Yellow	<ul style="list-style-type: none"> SMPCL and KEPCO to revise their HR Policies to include provisions on formation of worker's organization and retrenchment policy. The Policy to be also extended to third party workers i.e. any workers engaged in the factory premises by or through contractors. 	-	Updated HR Policy with the clause on provisions on formation of worker's organization and retrenchment policy. DGM (O&M)	Two (2) Months
3.	PS-2	Machine Guarding	<ul style="list-style-type: none"> As per the HIRA sheet and latest Annual Monitoring Report, February 2016, moving/rotating parts of the equipment at Fire Water Pump House, Acid Storage etc. have no machine guarding around them, hence posing serious risk of injury; 	Orange	<ul style="list-style-type: none"> SMPCL to ensure that all moving and rotating machine parts are provided with guard having controlled access. 	-	Zero access guarding for all equipment with moving/rotating parts. Plant Manager	One (1) Month
4.	PS-2	Overtime payment	<ul style="list-style-type: none"> During the review of the wage register of M/s Meghna Enterprise (one of the sub-contractor engaged by KEPCO) dated 20-Dec-2015, it was noted that the normal hourly pay for the workers is 46.875 Taka. Overtime paid to the worker noted to be 70 Taka/hour which is approximately 1.5 times of the basic pay which is against the requirement of Bangladesh Labour Act, 2006 which says that "worker works in an establishment on any day or week for more than the hours fixed under this Act, he shall, in respect of overtime work, be entitled to allowance at the rate of twice his ordinary rate of basic wage and dearness allowance and ad-hoc 	Orange	<ul style="list-style-type: none"> SMPCL to ensure that overtime paid to the workers engaged at the plant should meet the requirements of Bangladesh Labour Act, 2006 which is twice the ordinary rate of basic wage and dearness allowance 	-	Revised KEPCO's HR Policy & Procedure on wage and overtime in alignment with the Bangladesh Labour Act, 2006. DGM (O&M) and A&P Department -KEPCO	One (1) Month
5.	PS-3	Pollution Prevention	<ul style="list-style-type: none"> The laboratory results for October 2015 show lower value of ferrous ions concentration as compared to the previous recorded value. However, the reason behind the trend of iron concentration in all the four reports was unclear which could apparently be an analytical error on the part of the laboratory. 	Yellow	<ul style="list-style-type: none"> SMPCL should verify the laboratory chemical testing results for ferrous ion concentration in groundwater sample, which was found to be much higher than the DOE allowable limit (Jan 2015 and Oct 2015 results), by engaging a different third party laboratory to rule out analytical errors, if any. 	-	Reports on ground water quality Monitoring. DGM (O&M)	One (1) Month

S. No.	Applicable Performance Standard	Issue Identified	Summary of Issues	Flag	Proposed Action Plan	Budget and Resource	KPI Responsibility and	Timeline (from date of finalization of this report)
6.	PS-3	Waste Management	<ul style="list-style-type: none"> SPMCL's contract with M/S Prism for collection and disposal of biomedical waste has expired in March 2016. No copy of renewal of contract has been furnished for review. 		<ul style="list-style-type: none"> SMPCL to have a contract with DOE approved agency for disposing biomedical infectious waste or renew their contract with their existing service provider, M/s Prism Bangladesh Foundation, which expired on 9th March 2016. 	-	Valid contract with DOE approved agency for disposing biomedical infectious waste. DGM (O&M)	One (1) Month

4.0 Consolidated Corrective Action Plan for Projects of Summit's Turbine Division

Following key action items have been identified that require attention of SBIIPCL and SMPCL.

Note: The following action items should be read in conjunction with the observations, gaps and detailed recommendations provided and summary table presented in Section 3 of each of the above reports.

Sl. No.	Action Item	Budget and Resource	Responsibility and Timeline	Measurable Outcome
Common CAP to both sites				
1.	Amendment in HR procedures of SCL to include following: <ul style="list-style-type: none"> Overtime compensation to be paid at twice the basic salary and overtime hours maximum of 60 hours per week, as per Bangladesh Labour Act 2006 Provisions on formation of worker's organization and retrenchment policy Applicability of policy to third party workers i.e. any workers engaged in the factory premises by or through contractors. 	No additional budget or resources required.	HR Department of SCL One month	Updated HR Policy of SCL
SBIIPCL				
2.	Amendment in HR procedures of NEPC to include following: <ul style="list-style-type: none"> Overtime compensation to be paid at twice the basic salary and overtime hours maximum of 60 hours per week, as per Bangladesh Labour Act 2006 	No additional budget or resources required.	EHS Manager-NEPC One month	<ul style="list-style-type: none"> Report on labour engaged in three shifts Salary Slips Overtime Compensation records
3.	Arrangements for secondary containment for capturing spillage from the hazardous waste storage area	Budget: USD 80,000 – 90,000	EHS Manager - NEPC One month	<ul style="list-style-type: none"> Display of warning signages in the acid and alkali storage area Arrangements for spill kits and secondary containment in hazardous waste storage area Placing fuel tank within an impervious structure capable of containing 110% of the volume contained in the largest tank within the containment structure Implementation of Storm water management measures to prevent mixing of hazardous waste with storm water
4.	Implementation of Traffic Management Plan and maintaining records for inventory of vehicles and Fitness Certificate records	No additional budget or resources required.	Security In Charge - NEPC One month	<ul style="list-style-type: none"> Accident Monitoring records inventory of vehicles and Fitness Certificate records
SMPCL				
5.	Update the HSE policy and EHS Management procedures to	No additional budget or resources required.	DGM (O&C)	Updated HSE Policy with date and version mentioned

Sl. No.	Action Item	Budget and Resource	Responsibility and Timeline	Measurable Outcome
	include date of revision		One month	
6.	Amendment in HR procedures of KEPCO to include following: <ul style="list-style-type: none"> Overtime compensation to be paid at twice the basic salary and overtime hours maximum of 60 hours per week, as per Bangladesh Labour Act 2006 Provisions on formation of worker's organization and retrenchment policy 	No additional budget or resources required.	DGM (O&C) (SMPCL) and A&P Department -KEPCO One Month	<ul style="list-style-type: none"> Updated HR Policy of KEPCO Wage and overtime records of employees
7.	Provide guard on moving and rotating machine parts	No additional budget or resources required.	Plant Manager (KEPCO) One Month	Zero access guarding for all equipment with moving/rotating parts.
8.	Engage different third party laboratory for ground water sampling	Third party laboratory USD 3000	DGM (O&M) (SMPCL) One Month	Reports on ground water quality monitoring
9.	Enter into contract for biomedical waste disposal or renew existing contract with M/s Prism Bangladesh Foundation	No additional budget or resources required.	DGM (O&M) (SMPCL) One Month	Valid contract with DOE approved agency for disposing biomedical infectious waste.

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AECOM
19th Floor, Tower C, Cyber Terraces, Building 5, DLF Phase 3
Gurgaon, 122002, India
T +91-124-4682800/-2700
aecom.com