

## Environmental and Social Review Summary

### Sirajganj 3 Project

*This Environmental and Social Review Summary (ESRS) is prepared by MIGA staff and disclosed prior to the date on which MIGA's Board of Directors considers the proposed issuance of a Contract of Guarantee. Its purpose is to enhance the transparency of MIGA's activities. This document should not be construed as presuming the outcome of the decision by MIGA's Board of Directors. Board dates are estimates only.*

*Any documentation that is attached to this ESRS has been prepared by the project sponsor, and authorization has been given for public release. MIGA has reviewed the attached documentation as provided by the applicant, and considers it of adequate quality to be released to the public, but does not endorse the content.*

Country:	Bangladesh
Sector:	Power
Project Enterprise:	North West Power Generation Company Ltd
Environmental Category:	B
Date ESRS Disclosed:	June 21, 2016
Status:	Due Diligence

#### A. Project Description

Standard Chartered Bank (SCB) has requested MIGA to provide a Non-Honoring of Sovereign Financial Obligation guarantee for up to US\$45 million (plus future interest) of the debt financing for the construction of Sirajganj 3 (hereafter referred to as 'the Project' or 'S3') in Bangladesh. The Project includes the construction, installation and operation of a 225 MW dual fuel Combined Cycle Power Plant (CCPP). S3 is being sponsored by North West Power Generation Company Limited (NWPGL), a state-owned power generation utility that is a 100% wholly owned subsidiary of Bangladesh Power Development Board (BPDB), which was incorporated in 2007.

The Project will be the third unit constructed within the Sirajganj Power Complex (also referred to as the 'Saidabad Power Complex'). The Complex which is owned and operated by NWPGL, was developed in 2007 by in-filling "char land" (i.e. sandy, unconsolidated land that has emerged adjacent to the river through the gradual accumulation of sediment, on the Brahmaputra-Jamuna Floodplain) to create an approximate 40 ha area for the construction of power stations. The entire complex area has been built up approximately 3 meters above the surrounding floodplain and is part of the overall GOB's power sector master plan aimed at increasing energy generation to meet the growing power needs in the country. The land was developed by BPDB and leased to NWPGL for a period of 25 years. The Complex currently includes the Sirajganj 1 ('S1') operating unit, water treatment and cooling systems, administration buildings, 230 kV switchyard and switching station, gas pressure reducing station and NWPGL employee accommodation. Sirajganj 2 ('S2') (a 225 MW dual-fuel CCPP, and also a MIGA-guaranteed project) is currently under construction at the Complex and a fourth unit with an installed capacity of 413.8 MW (Sirajganj 4 or 'S4', currently being considered as joint IFC-MIGA project) is proposed. There is also a proposal to put a small (~7.6 MW) solar plant at the site.

The Project site is located about 15 km south-east of Sirajganj town and 135 km north-west of Dhaka on the western bank of the River Jamuna. It is located in Khas Barashimul Mouza in the Saidabad Union of Sirajganj Sadar Upazilla (sub-district) of Sirajganj District. The closest settlements to the Project site, Boroshimul and Ponchosona, are both located approximately 1 km from the Complex. Ponchosona, however is growing, and households have recently been established along the access road to the site approximately 300 m from the fence line.

Similar to S1 and S2, the Project involves the installation of one (1) gas turbine generator (GTG) capable of operating on natural gas and/or High Speed Diesel (HSD), one (1) Gas Booster Compressor, one (1) heat recovery steam generator (HRSG), evaporators, cooling towers, main and by pass stacks connected to a steam turbine Generator (STG) of condensing type for indoor installation, condensate and feed water system, cooling water system and auxiliary equipment. The Project will utilize access roads and water treatment and cooling systems that are being constructed for S2. A temporary jetty will be constructed for unloading heavy equipment. The jetty will be used for a period of approximately 2 months, and then it will be decommissioned. An Environmental and Social Management Plan for the construction, use and decommissioning of the temporary jetty is currently being prepared. Power from the Project will be evacuated to the national grid through existing 230kV switching station beside the Project site.

The proposed Project is designed on dual fuel based CCGT concept, will be operated predominantly by Natural Gas (NG) but has also the provision of High Speed Diesel (HSD) in case of emergency and non-availability of NG. Natural gas, the main fuel for the Project, will be supplied by Pashchimanchal Gas Company Ltd. (PGCL), a subsidiary of state-owned Petrobangla. PGCL will supply natural gas at a pressure of 500 psi through a 1.7 km and 12 inch pipeline from its existing valve station to the existing PGCL Regulating and Metering Station (RMS) on site. If needed, Bangladesh Petroleum Corporation (BPC) will supply HSD from its Daulatpur / Khulna Depot by rail up to Bangabandu Bridge West Railway Station which is situated at a distance of 1.5 km north east of the project site. The estimated HSD consumption for 80% plant load factor (PLF) is 920 m<sup>3</sup>/day.

NWPGCL has entered into Engineering, Procurement and Construction (EPC) contract with a Consortium of M/s China National Machinery Import & Export Corporation (hereinafter referred as 'CMC') and Fujian Electric Power Survey & Design Institute (hereinafter referred as 'FEDI'), China. A single contract has been signed on 12th July, 2015 between the two parties on turnkey basis. CMC is the consortium leader, and will provide overall project management while FEDI will provide technical expertise, including concept design and basic engineering.

The EPC team will undertake construction, commissioning and the first 2 years of operation of the Project, after which, operation of the Project will be handed over to NWPGCL. The turbines will be supplied by Siemens AG (Germany). The construction period is expected to last 36 months and approximately 400 workers will be engaged at peak construction of S3. All the temporary accommodations, drinking water arrangements, sanitation facilities will be provided by the contractor. The same EPC team (CMC and FEDI in collaboration with Siemens) was responsible for the construction, commissioning and operation of S1 and is currently undertaking construction of S2.

## **B. Environmental and Social Categorization**

This is a Category B project according to MIGA's Policy on Environmental and Social Sustainability (2013) because the environmental and social risks and impacts associated with this Project are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.

The key potential environmental and social issues associated with the Project during both construction and operation relate to air emissions (dust during construction, and NO<sub>x</sub>, possibly SO<sub>2</sub> (depending on the use of diesel), particulates and greenhouse gases during operations), noise, occupational health and safety risks, community health and safety risks (e.g. explosions, traffic accidents), solid and hazardous waste generation, and wastewater generation. There are also likely to be cumulative impacts related to the construction and operation of multiple power plants at the Sirajganj Power Station.

## **C. Applicable Standards**

While all Performance Standards (PSs) are applicable to this investment project, current information indicates that the investment will have impacts which must be managed in a manner consistent with the following PSs:

- PS1: Assessment and Management of Environmental and Social Risks and Impacts
- PS2: Labor and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community Health, Safety and Security

The proposed site is owned by BPDB, and will be leased to NWPGL. As the site is vacant, no physical or economic resettlement is required, and therefore, PS5 Land Acquisition and Involuntary Resettlement does not apply.

The Project is not expected to have any significant impact on terrestrial or aquatic biodiversity or ecosystem services, and therefore, PS 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources is not applicable. The Project is located adjacent to the Jamuna River and approximately 1 km south of the Jamuna Eco Park. The Project, as currently designed, will not have an impact on river hydrology or water quality, and therefore, is unlikely to affect aquatic fauna in the River. None of the species falling within the transportation route were identified as species of conservational significance as per IUCN. The Eco-Park was established by the Bangladesh Bridge Authority (BBA) primarily to offset trees removed for the construction of the bridge, protect the bridge footing by preventing erosion of the right bank of the Jamuna River and provide a recreation area for local residents. It is in fairly degraded condition (though there has been some recent plantation undertaken by the Bangladesh Bridge Authority) and it does not contain any habitats or species of conservation significance. The Project will construct a temporary floating jetty in a location adjacent to the Eco Park to transport plant machinery. This will also require the use of the road in the Park, along its western edge. The road will be temporarily reinforced with steel plates to facilitate the transportation of the equipment – no construction works will be required

in the Park. Current information indicates that no dredging of the Jamuna River is likely to be required. As reported in the S4 ESRS, the jetty area is not a habitat for the vulnerable and endangered turtle species that live in the Jamuna River.

No indigenous people were identified in the area affected by the project; therefore, PS7 does not apply. As the plant is located in an area that was recently developed with clean fill, no archaeological or historically important structures are present in the area, and the probability of finding significant cultural resources in the Project area is low, therefore PS8 does not apply.

In addition, the WBG EHS General Guidelines and Guidelines for Thermal Power Plants apply to this Project.

#### **D. Key Documents and Scope of MIGA Review**

As part of MIGA's environmental and social due diligence review of the Project, the following documents were reviewed:

- Environmental Impact Assessment (EIA) of the proposed Sirajganj 225 MW Combined Cycle Power Plant Project (Dual Fuel-3rd Unit) prepared by the Center for Environmental and Geographic Information Services (CEGIS), dated November 2015.
  - Volume I: Main Report,
  - Volume II: Occupational health, Safety and Environment Plan.
  - Volume III: Emergency Response Plan
- Final Report on Review of the Environmental and Social Impact Assessment (ESIA) Study prepared by CEGIS and dated May 29, 2016
- Addendum Report to the Environment & Social Impact Assessment (ESHIA) Study, and annexures, dated June 3, 2016.
- Draft Report – Pre-Visit: Environment, Health & Safety and Social due Diligence Assessment Report for 225 MW Combined Cycle Power Plant, Sirajganj, Bangladesh, by AECOM, dated April 2016.
- Information Memorandum for the financing of Sirajganj [215-220] MW Dual Fuel (Gas / Fuel Oil (“HSD”) fired) Combined Cycle Power Plant (3rd unit), Sirajganj, Bangladesh, by Standard Chartered (April 2016).
- ESAP Status Report (Sirajganj 2, May 2016).

In addition to the documents listed above, MIGA's due diligence included a site visit in May 2016, which focused primarily on the progress and Performance Standard compliance of S2. The visit included a tour of the Project site and the S2 construction site, visit to the Eco Park and proposed temporary jetty location, and meetings with Standard Chartered Bank (SCB), NWPGCL, PGCL, the ESIA Consultant (CEGIS), the ESMS implementation consultant (EQMS), the EPC contractor (CMC) and sub-contractors (NDE and NEPC), a local NGO (MMS) and members of local community. A phone conference was also held with AECOM, who are the Lender's Environment, Health, Safety and Social Due Diligence consultant for this Project, as well as the Lender's E&S consultant for S2.

## **E. Key Issues and Mitigation**

### PS1: Assessment and Management of Environmental and Social Risks and Impacts

#### *Environmental and Social:*

An Environment, Health & Safety and Social due Diligence Assessment was undertaken by independent consultants (AECOM, April 2016) against GoB regulations, IFC / MIGA Performance Standards, WBG EHS Guidelines and ILO Conventions ratified by Bangladesh. The findings of the due diligence review indicated that there were some gaps in the Project's ESIA, developed in November 2015. The gaps included limited information on construction phases including peak labour force and average labour force, lack of identification of stakeholders, limited information on workers' accommodation and lack of information on potential cumulative impacts (e.g. traffic, migrant workers, and hazardous materials). These gaps were addressed by CEGIS in a report (Final Report on Review of ESIA Study) dated May 29, 2016 and further addendum and annexures to the ESIA. These documents were submitted to MIGA on June 3, 2016. NWPGL has committed to addressing the remaining gaps through the implementation of an Environmental and Social Action Plan (ESAP) (see attached).

#### *Management Program:*

The ESIA identifies the major impacts and proposes mitigation measures in an Environmental and Social Management Plan (ESMP). The ESMP includes several plans for implementing mitigation and enhancement measures including Emergency Response Plan (ERP), Occupational Health and Safety Plan (OHSP), and Environmental Code of Practices (ECPs). The ESMP also covers both the construction and operations phases to address the gaps that have been identified (as indicated in the section above).

Both parties of the EPC consortium have International Standard Organization ISO14001:2004 consistent Environmental and Social Management Systems (ESMS) in place. For the construction phase, the EPC consortium will apply an integrated Environmental, Health and Safety (EHS) System, based on ISO 9001:2008, ISO 14001:2004 and British Standard for occupational health and safety management systems OHSAS 18001:2007 standards. The EHS System will ensure systematic implementation of the ESMP (including ERP, OHS Plan and ECPs). As agreed and indicated in the attached ESAP, prior to commencing construction, the EPC consortium will prepare and provide to MIGA a detailed project specific ESMP to comply with PS1 requirements.

As a condition of the MIGA's Contract of Guarantee (and the subsequent loan agreement) for S2, NWPGL engaged EQMS (a local consultant) to support development and implementation of the ESMS for operation of the Sirajganj Power Complex. The ESMS was developed at the corporate level addressing plant level environment and social risks and impacts in September, 2015. Currently, the ESMS only explicitly refers to S2 and focuses largely on the construction phase, but as it is implemented by the same people responsible for operation of S1, it is essentially being applied site-wide. It will be updated to ensure that it covers the activities of S1, S2 and S3 (S4 is an Independent Power Project, and therefore will have its own ESMS in place). During the site visit, documentation of the implementation of the ESMS, including E&S procedures, checklists and registries, were observed. The ongoing effectiveness of ESMS implementation will continue to be monitored throughout the construction of S2 and eventually S3.

*Organizational Capacity and Competency:*

For the construction, commissioning and handover phases of S2, NWPGL has established a Project Implementation Unit (PIU), which includes a Project Director, Deputy Project Director and Assistant Engineers (i.e. Civil, Electrical and Mechanical). Assistant Manager (AM) (Environment), AM (Safety & Security), AM (Labor welfare) and Medical Officer of Unit -1 will also support the Project Director of S2 during the Project implementation period. A similar unit (comprised largely of the same people) will be established for S3. At the corporate level, NWPGL has a Manager (EHSS) and Deputy Manager (Environment) – who are responsible for environmental reporting and overall environmental and social compliance of all NWPGL projects. NWPGL currently has an EHS department (referred to as the ‘Environment, Health, Safety and Social (EHSS) Cell’) staffed with 5 people. The department is headed by an EHSS Manager who reports to the Chief Engineer. The EHSS Manager is supported by a Deputy Manager (Environment) and a Deputy Manager (Health, Safety and Social). The department is responsible for the day-to-day supervision of the ESMP implementation and OHS compliance of the EPC contractor. It is also responsible for community engagement and Corporate Social Responsibility activities. In early 2016, EQMS an in-depth 2 day training to EHSS staff on IFC (MIGA) Performance Standards and WBG EHS Guidelines. EQMS also provided general ESMS awareness training to all employees on the S2 site.

CMC is the lead contractor in the EPC consortium. CMC is a wholly owned subsidiary of China General Technology Holding Ltd., a state-owned enterprise under the direct supervision of the Chinese central government. CMC entered the Bangladesh market in 1994, and since then has undertaken 8 projects in Bangladesh. FEDI is a wholly owned subsidiary of Power Construction Corporation of China and also a member of the International Federation of Consulting Engineers. It is a State-Owned Technological Enterprise and is qualified for the planning of power systems, survey & design of power plants and power transmission/transformation works.

The EPC consortium is responsible for implementing the ESMP during construction, including the monitoring program. CMC has appointed an EHS Manager for the construction phase of S2, and the manager is supported by 2 EHS staff. The EPC consortium arranges training of personnel during construction, and ensures that all EPC staff and sub-contractors have the experience and training that is required for their specific job. The EPC is also responsible for ensuring that sub-contractors comply with the ESMP and OHS requirements. Both NEPC and NDE have developed ESMSs that are based on NWPGL’s ESMS for the Project. NEPC has 10 EHS staff on site, and NDE has 3 EHS staff.

SCB is providing financing for the Project. SCB has adopted the Equator Principles, and as part of this commitment, it has commissioned independent technical and environmental consultants (AECOM) to undertake due diligence of the Project. The environmental and social due diligence review was done against national laws, MIGA’s Performance Standards, World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines and the Equator Principles.

*Emergency Preparedness and Response:*

NWPGL has prepared an Emergency Preparedness and Response Plan for the Sirajganj Power Complex. Emergency drills are held regularly (approximately every 2 months). Fire and life safety mechanisms are in place, and fire-fighting and first aid training was provided to staff in 2015.

PGCL undertakes regular (automated) monitoring of the gas pipelines. They also have a routine maintenance team, that regularly checks the pipelines and pipeline rights of way, and an emergency management team. The emergency management team has annual drills.

*Monitoring and Review:*

The EIA study proposes a monitoring program comprising of compliance monitoring, impact monitoring, and external or independent monitoring. The main purpose of this monitoring program is to ensure that the various tasks detailed out in the ESMP, particularly the mitigation measures, are implemented efficiently and effectively, and also project's impacts on key environment and social parameters are evaluated.

The monitoring program includes monitoring sites, parameters to be monitored and monitoring frequency. NWPGL currently prepares a quarterly Environmental and Social Monitoring Report for S1 and S2, and submits this report to Bangladesh Department of the Environment (DoE). DoE undertakes unscheduled monitoring visits the site at least every 3 months. They also monitor ambient noise and air quality in the local community.

During both construction and operations, in addition to ongoing reporting to DoE, annual environmental and social monitoring reports will be prepared and submitted to MIGA. For S2, SCB has also engaged a 'Lender's Environmental and Social Advisor' (also AECOM) to undertake regular third party monitoring of the construction phase. A similar arrangement will be put in place for S3.

PS2: Labor and Working Conditions

NWPGL currently employs approximately 150 people at the Sirajganj Complex. The EPC contractor and sub-contractors currently have approximately 200 staff on site for the construction of S2. During peak construction, the workforce will increase to approximately 650 – 150 Chinese staff (CMC and NEPC) and 500 local workers. S3 is expected to require similar level of workforce. Approximately 150 additional employees will be employed by NWPGL for the operation of S2 and S3.

NWPGL does not have a Human Resources Policy, but it does have a statement of objectives for human resource management, which includes a commitment to robust and comprehensive HR processes and strict and transparent recruitment. NWPGL has developed an Employee Service Book Rules, 2010, which entails recruitment conditions, remuneration and benefit package, amount of gratuity, accommodation services, medical benefits/ allowance, entitlement of leaves, travelling and daily allowances. The Rules are only applicable to employees directly employed by NWPGL. Consideration of third-party workers, however is included in the Human Resources Procedures included in the ESMS prepared by NWPGL. NWPGL has a documented grievance mechanism for workers, which allows employees to raise any concerns regarding their working environment. While there is currently no collective agreement in place, NWPGL have no policies restricting formation of a union and collective bargaining.

The EPC contractor(s) and their sub-contractors will follow their respective HR policies and the requirements of Bangladesh national laws, which include consideration of equal opportunity

employment and prohibits child labor. In the contract between NWPGL and the EPC contractor, the contractor agrees not to discriminate against any employee or applicant for employment by reason of race, color or national origin in carrying out this Contract. The EPC contractor uses a local recruitment company to recruit unskilled, short-term workers from the local community. Construction laborers are paid wages consistent with the national minimum wage.

NWPGL has accommodation on site for its employees, however a majority (approximately 70%) live off-site in the nearby Sirajganj town. The EPC and sub-contractors each have a temporary workers camp. The on-site accommodation for CMC and NEPC are within the boundary of the Sirajganj Power Complex, and are fairly compliant with the IFC / EBRD Guidance on Worker Accommodation. The local contractor's (NDE) camp is located approximately 100 m outside the Complex along the access road on a land leased from Jamuna Bridge Authority. The NDE camp was relatively new when the MIGA team visited in May 2016, and some gaps with the IFC/ EBRD Guidance were identified. These gaps have been compiled into a corrective action plan (see attachment).

As part of their Environment, Health and Safety Policy, NWPGL is committed to providing a safe working environment and inculcating safety awareness among employees. The Sirajganj site has a safety task force, which is responsible for monitoring working conditions at the site and ensuring that improvements are made, as required. The S1 plant site has appropriate safety and fire-fighting equipment, and it is planned that same will be in place at S2 and S3. There is also a medical clinic on site, which is available to staff 24 hours per day. There have been no reported Lost Time Injuries (LTIs) at the Sirajganj Power Complex since construction of S1 started in 2010.

The EPC contractor has developed written procedures for management of occupational health and safety (OHS) for construction in accordance with OHSAS 18001:2007 requirements. The EPC contractor will provide staff with Personal Protective Equipment (PPE) and will ensure that staff is appropriately trained in the health and safety aspects of their jobs. There is a clinic on site for the EPC staff. The clinic is staffed by one Chinese doctor and one Bangladeshi doctor. Thus far, during the construction of S2, there have been only minor injuries. Accidents and incidents are recorded, and investigations are undertaken of the more serious incidents.

### PS3: Resource Efficiency and Pollution Prevention

#### *Resource Efficiency:*

Greenhouse gases: The proposed plant has been designed with consideration for Dual fuel which is natural gas and High Speed Diesel (HSD). The Project will result in the emission of greenhouse gases (GHGs), primarily CO<sub>2</sub>. Approximate annual GHG emissions from the natural gas-fired, combined-cycle power plant is estimated to be 723,385tCO<sub>2</sub>e per year from the proposed third Unit (Unit 3) and 2,166,861tCO<sub>2</sub>e per year from the combined Unit 1, 2, 3. The Complex also has back-up diesel generators on site, which may be used infrequently during start-up and maintenance. NWPGL will quantify direct emissions as well indirect emissions for facilities within the Project boundary (including Units 1, 2, 3 and 4) annually. This quantification will be provided in the Project's annual environmental and social monitoring report submitted to MIGA.

It is anticipated that HSD will only be used as an alternative fuel on a temporary basis when natural gas is not available. HSD will be delivered via rail from BPC Depot in Chittagong / Daulatpur /



Khulna to the Bangabandhu Bridge West railway station, which is located approximately 3 km from the project site. NWPGL has constructed an HSD unloading and pumping station at the railway station and an HSD supply pipeline to the Power Complex.

**Water:** During construction, only a small amount of water will be required. Construction water will be taken from the existing on-site water treatment plant. The estimated water requirement for the plant is about 400 m<sup>3</sup>/hour (9,600 m<sup>3</sup>/day) during the operation phase of the project, primarily for steam generation and cooling water. This water requirement will be met by groundwater and recycling of cooling water. Deep tube wells will be drilled to provide water to treatment plant on site.

*Pollution Prevention:*

Air pollution, noise pollution, water quality/pollution, and solid waste are the main environmental issues associated with the proposed project.

**Air emissions:** Air emissions from the Project will primarily be dust/particulates during construction and stack emissions (sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO)) during operations. SO<sub>2</sub> emissions will only occur when the project is operated with HSD. The Project will have a stack height of at least 60 m, which was determined by a standard equation estimating dispersion based on anticipated SO<sub>2</sub> emission rates. Baseline conditions indicate that ambient air quality in the Project Area is within the limits defined by the National Air Quality Standards of Bangladesh (2005), which are consistent with the standards provided in the WBG EHS Guidelines. While dispersion modelling of cumulative emissions from S1, S2, S3 and S4 was not undertaken as part of the S3 ESIA, it was done for S4, and the results of the model indicate that maximum ground level concentrations of oxides of nitrogen, sulphur dioxide and particulate matter in the project area are likely to be well within the applicable standards (assuming the plants are operating on natural gas).

The ESMP includes measures to reduce dust emissions during construction, including dust suppression and regular maintenance of vehicles. Project design has incorporated a number of mitigation measures to reduce emissions during operations, including installation of a low NO<sub>x</sub> burner and dust filters to capture NO<sub>x</sub>, SO<sub>2</sub> and particulate matter. These are similar to the measures currently implemented at S1. Air quality monitoring undertaken for S1 indicates that the ambient air quality and stack emissions (note – S1 stack height of 45 m) are within the limits of National Air Quality Standards of Bangladesh (2005). S3 stack will be equipped with continuous emissions monitoring (CEM) equipment.

**Water Quality:** Baseline water quality monitoring undertaken during the ESIA process indicates that water quality conditions in the Jamuna River are consistent with Bangladesh surface water quality guidelines. During the construction phase, effluent from the Project will include sanitary sewage (kitchen and domestic waste), oily water and stormwater run-off. There may also be some impact from washing aggregate and sand. To prevent impact on water quality, septic tanks will be installed to manage sewage and construction works and cleared areas will be appropriately designed and rehabilitated to prevent erosion and sediment transport. Oily water is trapped in an oil/water separator, and the oil removed prior to discharge. The EPC Contractor will establish a water monitoring program for the construction phase. During operations, effluent from the project will include sanitary sewage (kitchen and domestic waste) and oily water. Non-contaminated water will

be routed into a storm water system and discharged to the surrounding area. Oily effluent from the engine hall, bunded areas, workshop and contaminated stormwater will be collected in an oily water pit. The oily water will be separated on site; oily sludge will be transferred into a road tanker for processing by a licensed contractor, as is currently done for S1. The Project is designed as a closed circuit – cooling water is recycled through the water treatment plan for reuse. It is not anticipated that there will be any discharge of cooling water.

*Noise:* The major noise sources include the air-cooled condenser (ACC) or cooling tower, steam turbine generator (STG), combustion inlet filter house, and the exhaust stack or heat recovery steam generator (HRSG). Noise and vibration from the project will be mitigated through engineering controls and wherever possible high noise equipment will be enclosed in noise-proofed buildings. Baseline noise levels in the Project Area (approximately 45 – 88 dB(A), which include the noise associated with S1) currently exceed WBG noise standards for residential areas (55 dB(A) during the day time and 45 dB(A) at night) and at times, exceed the standard for industrial areas (70 dB(A)). As the closest residential areas are approximately 300 m of the Project site, the potential for nuisance noise is limited. The employee accommodation within the Complex is situated approximately 200 m from noise generating equipment. Noise levels at the accommodation are likely to be within daytime standards, but exceed nighttime noise standards. NWPGL has taken steps to minimize noise impacts on employees residing within the Complex including use of construction materials and windows to minimize noise and the planting of trees between the plant site and the accommodation. Modelling of cumulative noise emissions (S1, S2, S3 and S4) was undertaken as part of the S4 ESIA, and the results of the modelling indicated that noise levels will remain within the acceptable limits at the plant boundary during the operations phase of all four units.

*Hazardous Materials:* Potentially hazardous materials consist of transformer dielectric oils, fuels and chemicals (such as anti-scaling / anti-corrosion agents). Hazardous waste during operation will include clean and used (contaminated) lubricant oil. Monitoring of S2 found that hazardous materials were not properly stored on site, and therefore, corrective actions have been identified and communicated to NWGPCL and CMC (see attached). NWPGL and the EPC have committed to improving storage to ensure that it is compliant with the requirements in the WBG EHS Guidelines. Hazardous waste, primarily waste oil, is collected and sold to secondary users. The updated ESMP includes management plans for hazardous substances and hazardous sludge management, including spill prevention and clean up.

*Waste:* The majority of wastes will be produced during the construction phase. These wastes include construction waste, such as spoil, packaging, and scrap metals. For S2, construction wastes are collected and sorted. Reusable wastes are sold to a secondary user and remaining solid waste is sent to the municipal waste dump. Waste generated during operations will include paper, packaging materials and food wastes. Recyclable waste materials will be collected separately. These measures will remain in place for the construction of S3.

#### PS4: Community Health, Safety and Security

The ESIA does not provide a thorough assessment of the potential community health and safety risks, however based on Project location (in a fairly remote area with no communities immediately adjacent to the site), design and proposed management plans, it is likely that there is only a very limited risk to public health and safety. NWPGL currently has a good relationship with local

municipal bodies such as the fire service, police and ambulance, and community health and safety will continue to be coordinated with these groups. The ESMS and the revised ESMP include consideration of community health and safety risks and impacts, and provide management measures to response to these risks and impacts.

The existing main road network to the project site is in fairly good condition. During construction, materials will be transported to site primarily by river (utilizing the jetty in the Eco Park) or rail. A traffic management plan has been developed and implemented at the Sirajganj Power Complex. Traffic movements during operation will be limited to personnel and maintenance vehicles, and it is considered that the existing road network has sufficient capacity to accommodate such movements without significant impact.

#### *Security Arrangements:*

The Sirajganj Power Complex has a Central Security Committee in place to supervise security of the site, and a Security Manual has been prepared. At the Corporate level, NWPGL has an *Assistant Management – Security and Investigation, Security Supervisor and Security Guards*, who is responsible for security at all NWPGL facilities. The Sirajganj Power Complex is raised approximately 3 m above the surrounding area and is fully fenced, with one gate to access the Complex, and a second internal gate to access the plant site. Both gates have security guards posted 24 hours a day. CCTV cameras covering the S2 and S3 sites will be monitored from a central control room.

Security guards at the site are a combination of contractors directly engaged by NWPGL and paramilitary troops assigned by the Government. Though the Government is ultimately responsible for management and training of paramilitary security forces stationed at the site, while on site, the security personnel are also required to respond to directions from the NWPGL Site Manager.

## **F. Environmental Permitting Process and Community Engagement**

The Bangladesh Department of the Environment (DoE) categorizes power generation projects as “Red Category”. Red Category projects are required to prepare and submit to DoE an Initial Environmental Examination (IEE) and an Environmental Impact Assessment (ESIA) in order to obtain Site Clearance and Environmental Clearance Certificates. For this Project, NWPGL has obtained an exemption of carrying out IEE from the DoE with a condition of conducting a comprehensive EIA in line with a Terms of References (ToR) approved by the DoE. The ESIA was undertaken by a local consulting firm (CEGIS). The DoE subsequently approved the ESIA in January 2016.

Consultation undertaken during the EIA process consisted of informal consultation, expert/institution consultation, focus group discussion and public consultation. A full range of stakeholders were consulted in order to gather local knowledge for baseline conditions, understand perceptions of the community regarding impact significance, and propose meaningful mitigation measures. Therefore, key stakeholders included concerned government departments/organizations, occupational groups, such as farmers, loom owners/workers, fishermen, traders, elite persons, teachers, NGOs etc. whose activities are likely to be impacted due to the implementation of the proposed Project. Furthermore, local inhabitants, interested groups, and NWPGL officials were

considered as the potential stakeholders and were also consulted. The results of consultation meetings indicated that the Project is well received by the local administration and residents.

A Stakeholder Engagement Plan (SEP) will be developed to include the consultation and disclosure activities that will occur throughout Project preparation and implementation, as required in the ESAP. The SEP will include including formal grievance redress mechanism. The existing stakeholder consultation/disclosure process will be articulated within the SEP and will include any new stakeholders identified by the project company as directly affected and vulnerable people.

NWPGCL has a Corporate Social Responsibility (CSR) Program, which identifies initiatives through a multi-stakeholder engagement program. In the Sirajganj area, the CSR program has supported improvements to the local mosque, offered blankets to an orphanage and donated computers to the local schools.

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*MIGA supports its clients (as defined in MIGA Policy on Environmental and Social Sustainability) in addressing environmental and social issues arising from their business activities by requiring them to set up and administer appropriate grievance mechanisms and/or procedures to address complaints from Affected Communities.*

*In addition, Affected Communities have unrestricted access to the Compliance Advisor/Ombudsman (CAO), the independent accountability mechanism for MIGA. The CAO is mandated to address complaints from people affected by MIGA-guaranteed business activities in a manner that is fair, objective, and constructive, with the goal of improving environmental and social project outcomes and fostering greater public accountability of MIGA.*

*Independent of MIGA management and reporting directly to the World Bank Group President, the CAO works to resolve complaints using a flexible, problem-solving approach through its dispute resolution arm and oversees project-level audits of MIGA's environmental and social performance through its compliance arm.*

*Complaints may relate to any aspect of MIGA-guaranteed business activities that is within the mandate of the CAO. They can be made by any individual, group, community, entity, or other party affected or likely to be affected by the environmental or social impacts of a MIGA-guaranteed business activity. Complaints can be submitted to the CAO in writing to the address below:*

*Compliance Advisor/Ombudsman  
International Finance Corporation  
2121 Pennsylvania Avenue NW  
Room F11K-232  
Washington, DC 20433 USA  
Tel: 1 202 458 1973  
Fax: 1 202 522 7400  
E-mail: [cao-compliance@ifc.org](mailto:cao-compliance@ifc.org)*

## **G. Availability of Documentation**

- Environmental Impact Assessment (EIA) of the proposed Sirajganj 225 MW Combined Cycle Power Plant Project (Dual Fuel-3rd Unit) prepared by the Center for Environmental and Geographic Information Services (CEGIS), dated November 2015.
  - Volume I: Main Report,

- Volume II: Occupational health, Safety and Environment Plan.
- Volume III: Emergency Response Plan
- Addendum Report to the Environment & Social Impact Assessment (ESHIA) Study, and annexures, dated June 3, 2016.
- Environmental and Social Action Plan (ESAP) (June 2016)

The above listed documentation is available electronically as PDF attachments to this ESRS at [www.miga.org](http://www.miga.org). The Final ESIA Report is also available for viewing at the following locations:

- Abu Ahmed Akhtar Hossain  
Project Director, Sirajganj Unit 2  
North West Power Generation Company Ltd.,  
Level-14, BidyutBhaban, 1 Abdul Gani Road, Dhaka-1000, Bangladesh  
E-mail: [pdsgccpp@nwpgcl.org.bd](mailto:pdsgccpp@nwpgcl.org.bd)

Fax: 88 02 9573877