Bangladesh Power Cell

Ministry of Power, Energy & Mineral Resources

Terms of Reference

APPOINTMENT OF CONSULTANT FOR CONDUCTING INITIAL ENVIRONMENTAL EXAMINATION (IEE) AND ENVIRONMENTAL AND SOCIAL IMPACT ASSESMENT STUDY (ESIA)

FOR PROPOSED ONSHORE LNG IMPORT AND REGASIFICATION TERMINAL AT MOHESH KHALI ISLAND OF COXS BAZAR

ANWARA, CHITTAGONG,
BANGLADESH.

POWER CELL
BIDYUT BHABHAN (9 TH FLOOR)
1 ABDUL GHANI ROAD,
DHAKA -1000

Table of Contents

1. Section-1

1.1 Country Context

With a population of 159 million and land mass the size of Greece, Bangladesh is one of the most densely populated countries in the world. In the past decade, the economy has grown at nearly 6% annually and poverty dropped by nearly a third, coupled with increased life expectancy, literacy, and per capita food intake. The country's economic outlook remains positive, with GDP growth rate expected to average 6% through 2019 and average expected inflation of 6%. Sound macroeconomic fundamentals have resulted in a relatively strong and stable the currency (taka) in recent years. However, despite these achievements, 47 million people (26% of the population) still live below the poverty line and 40% still do not have electricity access. The country faces major energy and infrastructure deficits, particularly in the energy, water and transport sectors.

1.2 Gas Sector

Bangladesh is a heavily natural gas dependent country where demand for natural gas is growing rapidly while existing reserves are depleting. The country faces severe gas shortages of around 500-650 MMcfd that are forecasted to increase. Its recoverable gas reserves of 16.36 trillion cubic feet is set to be exhausted within the next decade if no new gas fields are discovered. Lack of reliable gas supply has imposed a major constraint on economic development. Gas sales to the power sector have declined and the ensuing power shortage has caused disruption in industrial production, particularly in the clothing, ceramics, fabrics, and steel industries. Although large factories have their own power generation units, gas shortages have made them less useful. The World Bank estimates that most industrial facilities in Bangladesh are operating at half of their installed capacity due to a lack of reliable power and gas. Reliable long-term availability of natural gas is critical to the development of competitive industry in the country. GoB faces significant challenges in attracting international oil companies to engage in exploration activities in Bangladesh due to, among others, (i) low gas prices, (ii) market access constraints (no local marketing rights and export barriers), (iii) weak financial strength of the state counterparties, and (iv) slow legal and sector reform, especially regarding pricing of natural gas and petroleum products.

1.3 Project Context

The severe gas deficit has especially affected gas-fired power plants. These are either running below capacity or have been shut down due to non-availability of gas. To address this gas crisis, the Government of Bangladesh ("GoB") is undertaking two import Liquefied Natural Gas (LNG) projects, located in close proximity, on a Build Own Operate ("BOO") basis:

i) an offshore floating storage and regasification unit (the "FSRU"; IFC InfraVentures Project #34983), sponsored by Excelerate Energy of the U.S., which will help close the existing gas supply deficit in power plants, fertilizer plants, CNG-based transport and residential supply; and

ii) an onshore LNG import terminal ("the Project"), which will supply gas to 3,000 MW of new/ refurbished IPPs and existing or future power plants in Bangladesh to meet the country's growing electricity demand.

1.4 Project Description

The Project is expected to comprise of:

(i) Design, engineering, procurement, construction and commissioning of an on-shore LNG import terminal of 500mmcfd for the receiving, unloading, storage and regasification of LNG, including all receiving, unloading, storage and regasification facilities and all marine facilities, gas pipelines, infrastructure and interconnection facilities (together, the "LNG Import Terminal");

(ii) Owning, operating and maintaining the LNG Import Terminal on a build, own and operate (BOO) basis. The Project will operate as a tolling entity and earn a regasification margin, with GoB responsible for procuring imported LNG and selling RLNG output to 3,000 MW of planned gas-fired IPPs existing or future power plants in Bangladesh;

(iii) Receipt and storage of LNG at the LNG Import Terminal;

(iv) Regasification of the LNG ("RLNG");

(v) Delivery of the RLNG to a designated GoB entity.

1.5 Supply of LNG and Sale of RLNG

GoB will procure the imported LNG through a separate competitive tender process, which the Financial Advisor would advise GOB on. The Project will be undertaken in tandem with GoB's tender process for LNG procurement, to ensure availability of supply for the Project.

The Project will sell RLNG on a long term, take or pay basis to a designated GOB entity, which will have back-to-back gas sales agreements with power plant owners/ operators and other customers (supply permitting). The associated 3,000 MW of existing and/or planned power projects that will consume the Project's gas will ultimately be part of an integrated development effort. However the tender for these IPPs will be a separate process run by GoB/BPDB that is not part of the proposed investment in the Project.

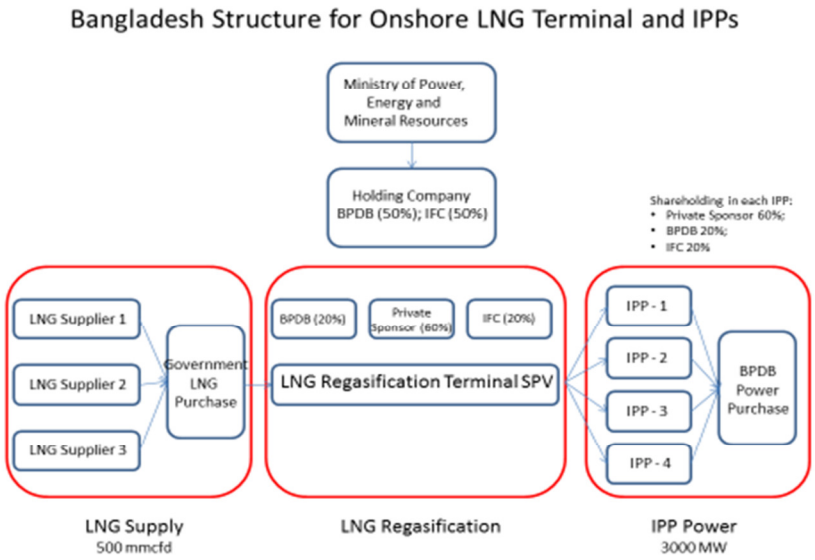
1.6 Lead Sponsor Selection

Given the difficulty faced by GoB over the past 7-8 years in attracting good private sector sponsors into these strategic energy assets, MPEMR requested IFC's help in co-developing the Project through IFC InfraVentures and bringing in a lead sponsor. Under the proposed arrangement, a Joint Development Agreement (JDA) is expected to be signed between BPDB or any of its subsidiary company , IFC and the lead sponsor (once selected) setting out the terms under which the Project will be developed. The Project will initially be owned 50% each by BPDB or any of its subsidiary company and IFC InfraVentures, with the lead sponsor subsequently taking 60% shareholding from BPDB or any of its subsidiary company and IFC after it is selected by GoB based on a competitive tendering process.

IFC InfraVentures is expected to play the role of a co-developer and surrogate sponsor until the lead private sponsor is selected and will co-invest alongside the lead sponsor selected by GOB at least until financial close. The development process includes initial work to be undertaken to define the Project technically, conducting detailed feasibility, assessing Environmental and Social impacts and developing management plans, developing commercial arrangements and legal contracts. In parallel with the development process, GOB (BPDB and the Power Cell of the MPEMR) will organize the competitive selection process to select the lead sponsor.

IFC's role, in addition to being a co-developer, is to be the Lead Arranger of the debt financing for the Project.

The diagram below presents a possible structure for the Project in which BPDB and IFC could hold a series of special purpose vehicles including the Project and 3-5 IPPs totalling 3000 MW. Alternatively, IFC and BPDB could hold the Project directly, and IFC could have the option to selectively participate in the associated IPP SPVs.



1.7 Expected Timelines

It is expected that the Project will take about 18 months to achieve financial close and another 33 months to commissioning.

Key Steps	Parties Involved		Approx. Time (months)
	Government	Developer	
Expression of Interest (EoI)	✓		Completed
Basis of Design (BoD) a.k.a Feasibility Study	✓		9-12
Request for Proposal (RFP)*	✓		
Project Award	✓		3-6
Front-End Engineering & Design (FEED)	✓	✓	
Financial Close	✓	✓	
Engineering Procurement Construction (EPC)		✓	33 - 36

1.8 Progress so far

GoB published a request for expression of interest from potential lead sponsors, to which fifteen companies responded and four companies were shortlisted. These are Mitsui (Japan), Shell (Netherlands), Petronet (India) and Huanqui Contracting & Engineering ("HQC") (China).

The next stage is the preparation of the RfP package for selection by the GOB of the lead sponsor from among the shortlisted bidders. The RfP package will include the Feasibility Study; Environmental & Social assessment; as well as the basic legal and commercial documents to underpin the concession.

1.9 Advisors

Power Cell has initiated a process for selection of the needed advisors to prepare the RfP package and help the selection of the Lead Sponsor. These advisors include: (a) Financial Advisor & Lead Transaction Advisor; (b) Technical Advisor; (c) Environment and Social Advisor (E & S Advisor); and (d) Legal Advisor. It is envisaged that the Technical Advisor will prepare an Outline Study that will help GOB decide on the Project site and then will develop the Concept Feasibility Study for the Project. After the lead sponsor is selected, the sponsor group may choose to continue with the same Technical Advisor or will engage its own Technical Advisor to develop the Detailed Project Report, in accordance with their business plan and within the broad requirements of the RfP package.

It is envisaged that a separate study will determine the siting and capacities of the new power plants, identify the existing units that need gas from the Project and determine the quantum of gas to be delivered to them. Results of this study will be available during the course of the LNG terminal feasibility.

1.10 E&S ADVISORS

This document sets out the terms of reference for the appointment of E & S Advisor to GOB (BPDB and the Power Cell of MPEMR).The E & S Advisor will assess and help manage the environmental and social impacts of the Project. The E & S Advisor will work in a coordinated manner with the Technical Advisor as it prepares Outline Study and later also when the Technical Advisor prepares the Concept Feasibility Study.

2. Section-2

2.1 Applicable Requirements

The Project will need to be designed, constructed, and operated in accordance with the following which should help guide the selected E & S Advisor:

- The Environmental Conservation Act, 1995 of the GoB;
- The Environmental Conservation Rules, 1997 and amendments thereof;
- Other applicable environmental, health and safety and social rules and regulations in Bangladesh;
- The IFC Performance Standards, 2012 (IFC PS);
- The IFC General EHS Guidelines;
- The IFC/WB Guidelines for Liquefied Natural Gas (LNG) Facilities;
- The IFC/WB Guidelines for Ports, Harbours and Terminals;
- The IFC/WB Guidelines for Gas Distribution Systems; and
- The IFC Stakeholder Engagement Handbook.

2.2 E & S Advisor Scope of Work

The scope of work for the LNG Import Terminal ESIA will include two phases in accordance to the Bangladesh government requirements:

- Phase I: Initial Environmental Examination (IEE); and
- Phase II: Environmental and Social Impact Assessment (ESIA) study.

Some of the key terms used through this scope of work include:

- *Study Area*: is the area defined to conduct the IEE. The Phase I IEE will evaluate a broader region to understand environmental and social sensitivities and risks and identify potentially suitable sites and the preferred alternative in conjunction with the Project Engineer.
- *Project Site*: The preferred alternative which is selected at the end of the IEE process for detailed evaluation in Phase II, which would include the LNG import terminal site.
- *Area of Influence (AoI)*: is defined by IFC PS1 as including, the area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
- *Deep Sea Port Facility*: Based on the current project description, this includes the infrastructure associated with the port development for the importation of coal and other materials, including the navigation channel.

2.3 Phase I: Initial Environmental Examination (IEE)

This phase will review the environmental and social sensitivities and risks of the Study Area in order to identify potentially suitable alternative site locations and a preferred Project Site in coordination with the Technical Advisor. The output from this phase includes the following, and is informed by the IEE

requirement for environmental site clearance / location clearance from the Bangladesh Department of Environment (DoE):

- Identification of the Project Site (aligned with the Project Engineer's Conceptual Feasibility Report);
- An IEE Report; and
- A completed IEE Checklist.

In order to efficiently and effectively conduct Phase I, a kick off coordination meeting with the project proponent and the Technical Advisor should be held. This coordination meeting will help define roles and responsibilities. While minimal engineering design will have been completed, close coordination with the Technical Advisor is important to identify and select feasible sites.

Phase I will predominately be a desktop study, but should include a screening site visit to validate the research and conduct the preliminary stakeholder consultation.

The IEE Report will involve the following sections:

- Project overview;
- Regulatory review;
- Baseline study based on a review of secondary sources;
- Preliminary consultation with stakeholders;
- Risk and impact assessment and potential mitigation measures; and
- Identification of potential sites for further analysis and selection based on likely impacts from an LNG Import Terminal.

In particular each of these sections should include the following additional information and any additional detail required by the DoE and IFC based on the information available.

Section	**Contents**
Project Overview	• Project components, including temporary facilities • Construction and operation stages and schedule • Process flow chart of operations • Plant layout, including pipeline details • Production details, including supply chain • Resource needs during construction and operation (e.g., water demand, labor) • Likely waste streams and embedded pollution control measures • Associated facilities • Identification of Study Area
Administrative and Regulatory Review	• Relevant institutions and regulators • Administrative framework • Applicable national and local standards for the project • International guidance and Good International Industry Practice (GIIP) applicable to the project

Section	Contents
Baseline Study	• Literature review to establish the physical environment, biological, socioeconomic baselines (see Annex 2 for more details) • Current land use in the Study Area including ecologically critical areas, national parks, forests, orchards, cultural heritage sites, settlements, infrastructure, agricultural and other land based activities (e.g. salt pans and prawn cultivation farms) • Environmental and social baseline conditions of the Study Area based on available information from secondary sources • Identification of other existing, under construction, and planned developments within the Study Area • Identification of ecologically sensitive areas like fish breeding grounds, Core Zone of Biosphere Reserve, mangrove areas and areas with threatened (rare, vulnerable, endangered) flora/fauna. • Identification of potentially Affected Communities, including vulnerable people and/or indigenous people. • Identification of baseline information data gaps
Preliminary Consultation	• Identification of stakeholders including government officials, elected representatives, affected peoples (including those may get displaced physically / economically due to project and its associated facilities), non-governmental organizations (NGOs) working in that area, other companies working in the area and other key stakeholders • Develop a strategy for engagement in line with guidance from DoE and IFC • Conduct preliminary consultation
Risk and Impact Assessment and Potential Mitigation Measures	• Initial assessment of risks and impacts of construction, operation and closure based on understanding from similar projects (see Annex 1 for general guidance on typical impacts and risks) • Preliminary identification of significant environmental and social impacts and risks based on desktop review and site visit • Identification of key embedded mitigation measures, in coordination with the Project Engineer • Proposed management plan and monitoring plan for risk and impacts during construction and operation phases (including Emergency Management)
Identification of Suitable and Preferred Sites	• In coordination with the Project Engineer, conduct an environmental and social screening of the Study Area to identify technically viable alternatives and a preferred Project Site based on sensitivities and risks from available baseline information, project activities during different phases, and potential control systems / measures • Document the Site Selection process

Much of the IEE will be based on the desk based baseline study. As such a detailed literature search will be conducted to compile available information on the environmental and social aspects of the Study Area; more guidance on potential sources of information is included in Annex 2.

Following the IEE, the ToR for Phase II ESIA Study will be finalized to specify the Project Site for assessment and the required studies as well as to confirm the associated facilities to be included in the assessments.

2.4 Phase II: ESIA Study

Phase II involves the preparation of an Environmental and Social Impact Assessment (ESIA) for the proposed onshore LNG Import Terminal at the Project Site (i.e., the preferred site identified in the Phase I IEE Report). Continued coordination with the project proponent and the Project Engineer is important both to share information of studies carried out by all parties, but also to ensure the ESIA is appropriately informed by the engineering design.

In order to define the Area of Influence and the scope of this Phase, it is important that at the least the following facilities are accounted for:

- LNG facility (including berthing);
- Associated Port Facility (including required navigation channel improvements);
- Dredge materials disposal locations;
- LNG shipping operations;
- Access roads and infrastructure; and
- Related pipelines.

This Phase II scope of work, as described below, is preliminary and will be finalized in conjunction with the project sponsor, the IFC, and the GoB based on the results of the Phase I IEE.

Task 1: Baseline Surveys

A comprehensive baseline survey will be conducted as part of Phase II ESIA in alignment with the requirements of local permitting and IFC PS. Annex 3 provides a general list of baseline studies to be considered. The final list of baseline studies will be determined in agreement with the project sponsor, the GoB and IFC. The impact assessment will rely on these data and it is necessary to ensure sufficient data are collected to enable a robust impact assessment.

The following baseline surveys are expected, at a minimum, to be conducted with sufficient detail to ensure appropriate baseline data for the Project Site and Area of Influence:

- ***Socio-economic***: Primary data would be collected at village and household levels by administering village and household questionnaires in the Area of Influence. In particular:
    - Identify communities and households in the Area of Influence and estimate population;
    - Assess the health, wellbeing and vulnerability of potentially affected communities;
    - Identify local systems of governance, administration, tribal and social set-up and conflict resolution;
    - Identify extent of natural resource and ecosystem services and its contribution to the local economy (including fishing);
    - Describe the local economy and dynamics;
    - Identify land uses at the Project Site and nearby areas;
    - Identify possible sensitive receptors;
    - Identify possible cultural heritage sites;
    - Identify preferred means of consultation (location, language and type of communications); and
    - Identify the presence of any indigenous people in the Area of Influence.
- ***Visual:*** Characterize the existing visual characteristics and identify possible receptors or important viewpoints based on visual sensitivity within the Area of Influence.
- ***Ambient Air Quality and Meteorological Data:*** A monitoring program will be carried out for up to two months period and will include Particulate Matter (PM_{10} and $PM_{2.5}$), Nitrogen Oxides (NOx), Sulphur Dioxide (SO_2), and Carbon Monoxide (CO). The ambient air quality sampling

network will be planned with regard to topography, population, sensitive locations, emission sources, background concentrations, wind pattern during the study period and possible impact zones in the study area. The meteorological data, including wind speed, direction, relative humidity, cloud cover, and rainfall will be compiled based on available nearby information, or if unavailable or inadequate, a meteorological station should be established at the Project Site.

- ***Noise*:** Background noise survey will be carried out at noise sensitive receptors near the Project Site.
- ***Soil and Groundwater:*** conduct a rapid assessment (non-intrusive) to identify any potential for existing or past soil and groundwater contamination in the Project Site, if applicable (i.e., if the Project Site is a greenfield site, this assessment will not apply).
- ***Water Resources:*** characterize the local surface water and groundwater and identify possible freshwater sources that could be impacted by the project.
- ***Marine Survey:*** Samples shall be collected to assess the marine water quality and marine ecology. The number, location, and frequency of this sampling will be decided based on the project design and the results of Phase I. Specific components will be:
    - Seawater quality and temperature;
    - Sediment physical and chemical characteristics (e.g. grain size, nutrient concentrations, presence of contaminants); and
    - Marine benthic invertebrates, micro-invertebrates, fish, and aquatic vegetation sampling shall be undertaken.
    - Observation of other marine fauna (e.g., marine mammals)
    - Identify any critical habitats using the definition of IFC PS6 other ecologically important habitats

Terrestrial Survey: survey will be undertaken to assess habitat type and quality, species, diversity, rarity, fragmentation, ecological linkage, age and abundance. A one-time rapid survey will be conducted for the following parameters:

- Identify any legally protected areas or internationally recognized areas;
- Identify any critical habitats using the definition of IFC PS6;
- Identify endangered or protected species or endemic floral and faunal species prevailing in the Area of Influence, considering the IUCN Red List and Bangladesh national lists;
- Identify vegetation cover and current status of natural habitats or species, including mangroves and other ecologically important habitats; and
- Identify and assess ecological resources.

- ***Cultural Heritage***: assess the Project Site and areas of potential disturbance for cultural heritage, including archaeological sites (underwater and upland), historic sites, and living cultural heritage. Identify any critical cultural heritage using the definition of IFC PS8.
- ***Traffic studies:*** a localized traffic study will be conducted to include ground traffic as well as documenting existing navigation channels or shipping lanes and ship traffic.

The Project Engineer will likely be responsible for geotechnical and tidal studies, but the results of those studies should be used to inform the ESIA.

Task 2: Stakeholder Engagement

A Public Consultation and Disclosure Plan (PCDP) including identified stakeholders with an assessment of their interest in the project will be developed. A preliminary stakeholder database of key institutional stakeholders and representative community members for preliminary stakeholder consultation will be developed. In coordination with the project proponent, the Scoping Meetings and Disclosure Meetings should be conducted as part of the formal stakeholder engagement process.

The consultant and project proponent should conduct sufficient engagement to achieve "broad community support" and should be guided by the IFC's Stakeholder Engagement Handbook. The consultation process and its results are to be documented and reflected in the ESIA as the IFC requires that the views and concerns of stakeholders be made known to decision makers and taken into account by the Project.

Task 3: Quantitative Modelling

The approach to the assessment of environmental impacts will be based upon the changes in the receiving environment caused by the project. Wherever possible, impact predictions will be quantified and where not possible or practicable, impact assessment will be based on expert professional judgment. To support the quantification, certain additional modeling studies may be required in the approved ToR, namely:

- Noise Modeling;
- Air Quality Modeling;
- Spill Modeling (if determined to be needed);
- Hydrodynamic Modeling;
- Dredge/Sediment Plume Modeling
- Thermal Plume Modeling; and
- Traffic Modeling.

The following studies may be the responsibility of the Project Engineer, but this will need to be confirmed and coordinated as the project progresses. The results of these should be used to inform the ESIA, in particular:

- Dredge Materials Storage Modeling;
- Thermal and Vapor Modeling (to determine the secured zone);
- Catastrophic Risk Modeling; and
- Wave and Ship Wake Modeling.

Task 4: Supplementary Assessments

As will be agreed upon in the Phase II ToR, specific assessments will be needed to align with the applicable IFC PS and EHS Guidelines. A summary of these studies' findings will be incorporated and integrated into the ESIA report:

- Critical Habitat Assessment;
- Community Health Assessment;
- Climate Change Risk Assessment;
- Security and Shipping Assessment (possibly to be conducted by the Project Engineer);
- Ecosystem Services and Livelihoods Assessment;
- Land Acquisition and Displacement;
- Document Broad Community Support, where applicable
- Alternatives Analysis; and
- Cumulative Impact Assessment (especially important to consider the associated facilities and other developments planned in the project vicinity).

Much of the data supporting these assessments will need to be collected during Task 1.

Task 5: Risk Assessment and Emergency Response

It is understood that the Project Engineer will consider a HAZID/HAZOP during the Front End Engineering and Design (FEED) stage. Depending on the timing, the results of this should be summarized in the ESIA and used to inform the Emergency Response Plan which will be coordinated

with the surrounding community and resources. The Risk Assessment should identify an appropriate exclusion zone to protect public safety as well a local facilities and capacity for response.

Task 6: Impact Assessment and Mitigation Measures

The approach to the assessment of environmental impacts will be based upon the changes in the receiving environment caused by the Project, followed by an assessment of the overall significance of these changes, compared with the baseline condition. Wherever possible, impacts will be quantified and/or represented via GIS mapping. Where such assessment is not possible or practicable, impact assessment will be based on expert professional judgment and informed by the results of consultation. The environmental significance will be judged in relation to applicable national / international environmental standards. The impact assessment exercise will cover all related project activities and the full project lifecycle (i.e. construction, operations, etc.). Mitigation measures will be coordinated with the Project Engineer to identify the embedded mitigations and determine the need for any additional mitigation measures.

Task 7: Management Plans & Monitoring

Management plans and monitoring to be taken during the various phases of the project (construction, operations, decommissioning) to avoid, reduce, mitigate, or compensate for adverse environmental, social, and health and safety impacts should be identified. To the extent possible, desired outcomes should be measurable as key performance indicators (KPI), targets or acceptance criteria that can be tracked over defined time periods. The indicative resources, including budget and responsibilities required for implementation should be identified. The monitoring requirements will be based on the more stringent of either national regulations or IFC requirements. Participatory monitoring should be considered based on the results of consultation.

3. Section-3

3.1 Phase-1 Deliverables and Schedule

Phase I should be completed and final report submitted within 12 (twelve) weeks from the date of kick-off meeting, with following progressive deliverables:

- Draft IEE Report: To be submitted within 8 (eight) weeks.
- Feedback: To be provided within 2 (two) weeks of receipt of the report.
- Final Report: To be submitted within 2 (two) weeks of receiving comments.

The IEE Report should address the sections described above but should also include a completed IEE Checklist per DoE regulations based on information provided by the project proponent. The consultant should support the project proponent in achieving site clearance which is ultimately the proponent's responsibility. The ultimate objective of Phase I is to secure preliminary agreement among the project sponsor, the IFC, and the GoB on the preferred site for the onshore LNG import terminal. The timeline for the GoB regulatory approval may impact the project schedule, in particular the kick-off of Phase II.

3.2 Phase-2 Deliverables & Time Schedule

The ESIA should be completed and final report submitted within approximately 12 to 18 months from the date of kick-off meeting.

The consultant should support the project proponent in achieving regulatory approval of the ESIA which is ultimately the proponent's responsibility. This includes support in responding to comments and questions from the regulators during the ESIA review process.

Please see Annex 3 for a generic outline of an ESIA which follows good international industry practice (GIIP). GIS should be used to generate maps showing the sensitive areas and supporting any related analysis.

4. Section-4

4.1 Consultant Qualifications

The Consultant selected is expected to demonstrate the range of qualifications, skills, knowledge, and experience to effectively conduct the scope of work, including:

- Previous experience and working familiarity with the IFC Performance Standards;
- Bangladesh-specific knowledge and experience;
- Past experience with LNG Terminals and ports;
- Indicate the composition of the proposed team, which is expected to include professionals trained in applicable fields of study, such as in environmental engineering, environmental sciences, biology, social sciences, civil engineering, and/or archaeology. CVs must be provided for the proposed team;
- The project manager is required to have a minimum of 10 years of relevant experience;
- For international consultants, association with Bangladesh specialists is encouraged unless the international consultant can demonstrate significant knowledge and experience; and
- Qualifications for all proposed staff must include relevant technical capabilities, specific previous project experience similar to this Project, specific country/ regional experience and language skills.

4.2 Financial Proposal

Consultants will complete Annex 4, with rates and amounts proposed in US$. Proposals should indicate level of effort by labor category by task and should identify labor costs and expenses by task, including a total cost. The financial proposal for Phase I should be a firm fixed price. The financial proposal for Phase II should reflect a reasonable professional estimate based on available information. The final cost for Phase II will be negotiated after the completion of Phase I. The payment scheme will be negotiated and agreed upon signature of the Service Contract.

4.3 Other Considerations

The proposal and all project deliverables should be presented in English. All data/ reports/ presentations/ deliverables generated as part of the study shall be the property of Bangladesh Power Cell and will not be shared by the Consultant, with any other party, in any form or manner. Standard WBG contractual terms regarding confidentiality, conflict of interest will apply. The consultant will be selected based on a consideration of technical qualifications and cost.

4.4 Questions and Clarifications

Any questions and clarifications should be sent by e-mail to [email] no later than [date].
Responses will be provided no later than [date].

Annex 1: Illustrative Project Related Environmental and Social Risks

The typical environmental and social issues associated with an LNG Import Terminal provided below have been adapted from the IFC EHS Guidelines for LNG Facilities:

- *Threats to aquatic and shoreline environments*, in particular from dredging, other sediment suspension, operational and ballast water discharges.
- *Hazardous materials* as the storage, transfer, and transport of materials may result in leaks or accidental release from tanks, pipes, hoses, and pumps at land installations.
- *Wastewater* since the he use of water for revaporization heating at LNG receiving terminals may result in significant water use and discharge streams. Other waste waters routinely generated at LNG facilities include process wastewater drainage, sewage waters, fire water, equipment and vehicle wash waters and general oily water.
- *Air emissions* (continuous or non-continuous) from LNG facilities include combustion sources for power and heat generation (e.g. for dehydration and liquefaction activities at LNG liquefaction terminals, and regasification activities at LNG receiving terminals), in addition to the use of compressors, pumps, and reciprocating engines (e.g. boilers, turbines, and other engines). Air emissions can also be associated with venting, flaring, boil off gas (BOG) and fugitive emissions.
- *Noise* sources include pumps, compressors, generators and drivers, compressor suction / discharge, recycle piping, air dryers, heaters, air coolers at liquefaction facilities, vaporizers used during regasification, and general loading / unloading operations of LNG carriers / vessels.
- *LNG Transport* has common environmental issues including hazardous materials management, wastewater, air emissions, solid waste generation (which can be regulated under MARPOL) as well as marine traffic and safety implications.
- *Occupational and Community Safety* as LNG facilities may have fire and explosion hazards that result from the presence of combustible gases and liquids, oxygen, and ignition sources during loading and unloading activities, and / or leaks and spills of flammable products.

Noting the project's setting, particular consideration should be provided for:

- *Marine sediments*: The near shore ocean depth is quite shallow in the Study Area and so construction and maintenance dredging and disposal of the dredged materials will be required.
- *Marine livelihoods*: the communities in the area may rely on various marine resources, including prawn cultivation, so understanding the ecosystem services and socio economic link will be important.
- *Cumulative impacts*: given the scale of other developments in the area and the density of settlements, understanding the cumulative impacts will be important whether these are environmental emissions (e.g., air and noise), changes in traffic, or demand for public services (e.g., emergency responders and water availability).

Annex 2: Guidance for Phase I Literature Review

Significant gaps or limitations in the available data will likely be identified, but the literature review and secondary data collection for the IEE should cover, though not be limited to, the following sources:

- Applicable environmental and social policies and guidelines and environmental management / monitoring procedures at the existing Port Facility;
- Geo-referenced maps and aerial photography of the area including use of available maps prepared for the coal based power plant and port ESIA studies;
- Climatic and meteorological conditions of the study area based on data from Bangladesh Meteorological Department;
- Air quality information (including seasonal variations) from the DoE and ESIA study reports of other under construction / planned projects within the study area;
- Available background noise data within study area and identification of key existing noise sources from the DoE and ESIA study reports of other under construction / planned projects within the study area;
- Current and proposed future land usage of the area considering that the Bangladesh Power Development Board (BPDB) is planning to construct 8,320 MW coal- and LNG-based power plant complex (4 units of 1,000 MW coal power plant, 2 units of 660 MW coal power plant, 4 units of 750 MW LNG power plant, coal unloading, transporting and storing facilities, and 800 KV grid sub-station) in Maheskhali, which may require about 5,000 acres of land;
- Identification, mapping and prioritization of Air Sensitive Receptors (ASR) within the Study Area;
- Identification and prioritization of Noise Sensitive Receivers (NSR) in the close vicinity of the Study Area (this will include both human and biological receivers);
- Terrestrial and marine ecology and identification of sensitive habitats and species (with reference to IUNC's Red List);
- Nearby fisheries resources (including prawn cultivation);
- Physical and chemical oceanography;
- Terrain profile and elevations/topography within the study area;
- Surface hydrology and morphology data from Bangladesh Water Development Board (BWDB) and Bangladesh Inland Water Transport Authority (BIWTA) and other sources such as SRDI;
- Agro-ecological zone data collection from AEZ report and agricultural data collection from Bangladesh Bureau of Statistics (BBS) and Department of Agriculture Extension (DAE);
- Hydrogeological information from Department of Public Health and Engineering (DPHE) and other sources;
- Vessel traffic information;
- Land acquisition plan and status of land acquisition including resettlement action plan and livelihood restoration plan; and
- Socio-economic information including Administrative Structure and Composition; Demography; Age Structure; Education; Health Profile; Gender Equity; Labor and Employment; Ethnic Composition; Religious Composition; Vulnerable Social Groups and Households; Fixed Assets (Land & Property) Ownership; Employment and Local Enterprises; Access to Finance; Health Service Infrastructure; Roads and Transport; Electricity; Education; Water Supply Infrastructure; Sanitation and Waste Management, based on census information, BBS data as well as other government departments and site specific studies available.

Annex 4: Breakdown of Costs (exclusive of VAT)

This Annex provides an outline for a typical ESIA that meets GIIP that can be adapted for this LNG Terminal:

1. **Introduction and objectives**
2. **Project justification/ rationale**
3. **Regulatory framework**
4. **Project description**
5. **Alternatives analysis and siting**
6. **Stakeholder engagement, consultation and disclosure plan**
7. **Environmental and social baseline**
    - 7.1. General Environmental Baseline
        - 7.1.1. Area of influence
        - 7.1.2. General environmental context (any key/ unique resources)
        - 7.1.3. Meteorology
        - 7.1.4. Ambient air quality
        - 7.1.5. Ambient noise
        - 7.1.6. Soil quality
        - 7.1.7. Land use
        - 7.1.8. Geology and geomorphology
        - 7.1.9. Surface water and groundwater resources
        - 7.1.10. Biodiversity (and critical habitats)
            - 7.1.10.1. Aquatic biodiversity
            - 7.1.10.2. Marine biodiversity
            - 7.1.10.3. Terrestrial biodiversity
            - 7.1.10.4. Protected areas and internationally recognized areas
    - 7.2. General Social Baseline
        - 7.2.1. Area of influence
        - 7.2.2. Geographic and political context
        - 7.2.3. Administrative framework
        - 7.2.4. Population and demographics
        - 7.2.5. Communities and vulnerable peoples, including indigenous people
        - 7.2.6. Formal and informal institutions
        - 7.2.7. Economics (local, regional, and national)
        - 7.2.8. Employment and livelihoods
        - 7.2.9. Use of natural resources
        - 7.2.10. Land ownership and use
        - 7.2.11. Social infrastructure and services
        - 7.2.12. Tourism and recreation
        - 7.2.13. Availability and quality of ecosystem services
        - 7.2.14. Health
            - 7.2.14.1. Health legislative and institutional framework
            - 7.2.14.2. National health accounts
            - 7.2.14.3. Health policy and implementation programs
            - 7.2.14.4. Community health risk factors or health determinants
            - 7.2.14.5. Morbidity and mortality
            - 7.2.14.6. Health care delivery services
            - 7.2.14.7. Private and traditional health workers
        - 7.2.15. Cultural Heritage
            - 7.2.15.1. Tangible
            - 7.2.15.2. Intangible
            - 7.2.15.3. Critical cultural heritage

Annex 4: Breakdown of Costs (exclusive of VAT)

8. **Environmental and social impacts and risk identification (TBD for construction and operation)**
   - 8.1. General
     - 8.1.1. Physical environment
       - 8.1.1.1. Air quality
       - 8.1.1.2. Noise
       - 8.1.1.3. Water use and effluents
       - 8.1.1.4. Waste Management
       - 8.1.1.5. Soil
       - 8.1.1.6. Groundwater
       - 8.1.1.7. Marine environment
       - 8.1.1.8. Topography and geomorphology
       - 8.1.1.9. Land use
       - 8.1.1.10. Visual
     - 8.1.2. Biodiversity (and critical habitats)
       - 8.1.2.1. Aquatic habitats
       - 8.1.2.2. Terrestrial Habitats
       - 8.1.2.3. Protected Areas or Internationally Recognized areas
       - 8.1.2.4. Ecosystem Services
     - 8.1.3. Socioeconomics
       - 8.1.3.1. Communities and vulnerable peoples, including indigenous people
       - 8.1.3.2. Population and demographics, including influx
       - 8.1.3.3. Social networks and customs
       - 8.1.3.4. Economics (local, regional, and national)
       - 8.1.3.5. Employment and livelihoods
       - 8.1.3.6. Use of natural resources
       - 8.1.3.7. Land ownership and use
       - 8.1.3.8. Physical and economic displacement
       - 8.1.3.9. Social infrastructure and services
       - 8.1.3.10. Tourism and recreation
       - 8.1.3.11. Ecosystem services
     - 8.1.4. Health
       - 8.1.4.1. Health infrastructure and capacity
       - 8.1.4.2. Community health risk factors or health determinants
       - 8.1.4.3. Morbidity and mortality
       - 8.1.4.4. Health care delivery services
       - 8.1.4.5. Private and traditional health workers
     - 8.1.5. Cultural heritage
       - 8.1.5.1. Tangible
       - 8.1.5.2. Intangible
       - 8.1.5.3. Critical cultural heritage
9. **Mitigation and Management Measures**
10. **Residual Impacts**
11. **Cumulative Impact Assessment**
12. **Environmental and Social Management Plans**
    - 12.1. Construction Phase
    - 12.2. Operations Phase
    - 12.3. Abandonment Phase
13. **Risk Assessment**
14. **Monitoring Program**
15. **Environmental and Social Management System (ESMS)**