



Rupantarita Prakritik Gas Company Limited (RPGCL), A Company of Bangladesh Oil, Gas & Mineral Corporation (Petrobangla), RPGCL Bhaban, New Airport Road, Plot#27, Nikunja-2, Khilkhet, Dhaka-1229, Bangladesh

EOI for Appointing International Consulting Firm

For

“Top Supervision, Monitoring of Techno- Economic Feasibility Study and related Works of Consulting Firm (Appointed by LNG Cell, Petrobangla) and Selection of Terminal Developer or Any Other Designated Entity for Construction of Land Based LNG Terminals at Moheshkhali, Kutubdia of Cox’s Bazar and Payra of Patuakhali of Bangladesh”

July, 2016

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Section –A

NOTICE INVITING EXPRESSIONS OF INTEREST (EOI)

EOI for Appointing International Consulting Firm

For

“Top Supervision, Monitoring of Techno- Economic Feasibility Study and related Works of Consulting Firm (Appointed by LNG Cell, Petrobangla) and Selection of Terminal Developer or Any Other Designated Entity for Construction of Land Based LNG Terminals at Moheshkhali, Kutubdia of Cox’s Bazar and Payra of Patuakhali of Bangladesh”

1	Ministry / Division	Energy and Mineral Resources Division, Ministry of Power, Energy & Mineral Resources.
2	Agency	Rupantarita Prakritik Gas Company Ltd.(RPGCL), A Company of Bangladesh Oil, Gas & Mineral Corporation (Petrobangla)
3	Procuring Entity Name	Rupantarita Prakritik Gas Company Ltd. (RPGCL),
4	Procuring Entity Code	N/A
5	Procuring Entity District	Dhaka
6	Invitation for Expression of Interest (EOI)	EOI for appoint International Consulting Firm for Supervision and Monitoring of Techno-Economic Feasibility Study & Engineering Services work of Consulting Firm appointed by LNG Cell, Petrobangla for Construction of Land Based LNG Terminals at Moheshkhali, Kutubdia of Cox’s Bazar and Payra of Patuakhali in favor of RPGCL.
7	Invitation Ref. No.	28.19.0000.804.25.002.16
8	Date	14/07/2016
KEY INFORMATION		
9	Procurement Method	Quality & Cost Based Selection (QCBS)
FUNDING INFORMATION		
10	Source of Fund	RPGCL’s own Fund
11	Development Partners (if applicable)	N/A
PARTICULAR INFORMATION		
12	Project/ Program Code (if applicable)	N/A
13	Project/ Program Name (if applicable)	N/A
14	EOI Closing Date, Time and Place	Date:09/08/2016, Time: 12:30 PM Place: Board Room, MD Section, RPGCL Bhaban(2 nd Floor), New Airport Road, Plot#27, Nikunja -2, Khilkhet, Dhaka-1229, Bangladesh
INFORMATION FOR APPLICANT		
15	Brief Description of Assignment	Conducting Top-supervision and Monitoring of Techno-Economic Feasibility Study and Engineering Services Work of Consulting Firm appointed by LNG Cell, Petrobangla and selection of Terminal Developer or any other designated entity and assist/recommend to RPGCL. The EOI application shall be submitted by interested applicants in accordance with the scope of services as described in the EOI document.
16	Eligibility of Consulting Firms	Consulting Firms will be shortlisted based on the following experience/qualification criteria to be assessed from the documentation

		<p>submitted with the application together with verification as necessary:</p> <ul style="list-style-type: none"> (a) Overall general experience of having been engaged in relevant field during last 10 (ten) years, preceding the date of submission of the EOI applications, in providing consultancy services in oil and gas industry especially in LNG sector , as either a single entity or a joint venture(JV) partner. (b) Specific experience of having successfully completed within last 10 (ten) years, preceding the date of submission of the EOI applications, at least 01 (one) experience of supervision, monitoring & Engineering services for techno-economic feasibility study for Land based Liquefied Natural Gas (LNG) Regasification, as either a single entity or a JV partner. (c) The firm shall have originated from an eligible source country (all countries of the world except those countries that has no Diplomatic relation with Bangladesh). (d) The qualification/experience of only the interested JV partners will be evaluated while the qualification/experience of the Sub-contractors or Sub-consultants or Associate firms will not be included in the evaluation process. (e) The applicant firm shall submit, as evidence of specific experience, concerned client's certificate stating satisfactory completion of the services including, as minimum, a brief and clear description of Consultant's services together with duration of services from commencement to completion. (f) Request for Proposal (RFP) documents and relevant papers will be issued to the shortlisted firms only. (g) The firm appointed by LNG Cell, Petrobangla or any other designated entity for Techno-Economic Feasibility Study and Engineering Services work for construction of Land Based LNG Terminals at Moheshkhali, Kutubdia of Cox's Bazar and Payra of Patuakhali is not Eligible for this services.
17	Other Details (if Applicable)	<p>The intending consulting firms are requested to collect the "EOI document" from the office of the GM(Operation), RPGCL, RPGCL Bhaban (1st Floor), New Airport Road, Plot # 27, Nikunja-2, Khilkhet, Dhaka-1229, Bangladesh during office hours beginning from 14/07/2016 to 9/08/2016</p> <p>or</p> <p>Download from RPGCL website:www.rpgcl.org.bd, Petrobangla website: www.petrobangla.org.bd, Ministry website: www.mpemr.gov.bd, and CPTU website: www.cptu.gov.bd.</p> <p>The Employer will respond to any written request for clarification, provided that such request is received no later than 10 (ten) days prior to the deadline for submission of EOI applications.</p>
18	Firms' Composition	<p>The interested consulting firms may either be a single firm or Joint Venture (JV) of more than one firms and Sub-contractor or Sub-consultancy or Associate firms may also be included if necessary.</p> <p>In the case of a JV, all members of such JV should have real and well-defined inputs to the assignment and the number of firms in the JV shall be limited to a maximum of three (3), excluding Sub-contractors, Sub-</p>

			consultants and Associate Firms, if any. All JV partners shall be “Jointly and Severally” responsible for the assignment. An appropriate Declaration of Intent in that regard and signed by all JV partners mentioning the name of the lead partner and the name of the authorized signatory shall be submitted with the EOI application.		
19	Ref. No.	Phasing of Services	Location	Indicative Start Date (Month/Year)	Indicative Completion Date (Month/Year)
	---	Single phase	Coastal region of Bangladesh	December’ 2016	November’ 2020
PROCURING ENTITY DETAILS					
20	Name of Official Inviting Expression of Interest		Engr. A.I.M Nurullah		
21	Designation of Official Inviting Expression of Interest		GM(Operation)		
22	Address of Official Inviting the Expression of Interest		Rupantarita Prakritik Gas Company Ltd.(RPGCL), RPGCL Bhaban (1 st Floor), New Airport Road, Plot # 27, Nikunja-2, Khilkhet, Dhaka-1229, Bangladesh		
23	Contact details of Official Inviting the Expression of Interest		Tel: 88 (02) 8900374 Fax: 88 (02) 58953948 E-mail: Inq@rpgcl.org.bd ; Ingrpgclbd@gmail.com		
24	The Procuring entity reserves the right to accept or reject any or all EOI applications without assigning any reason.				

(Engr. A.I.M Nurullah)
 GM(Operation), Rupantarita Prakritik Gas Company Ltd.(RPGCL)
 RPGCL Bhaban (1st Floor), New Airport Road, Plot # 27, Nikunja-2,
 Khilkhet, Dhaka-1229, Bangladesh
[website: http://rpgcl.org.bd/](http://rpgcl.org.bd/)

SECTION – B

INSTRUCTIONS TO THE APPLICANTS

1.0 GENERAL

1.1. Background:

Natural gas is the only indigenous commercial energy resource of Bangladesh. Natural gas currently accounts for 75% of the commercial energy needs. Most of the natural gas is used in generation of electricity and production of urea fertilizer, with significant uses in industrial, commercial and domestic purpose as well as fuel for CNG operated vehicles. The sector therefore has vital importance for economic development and poverty alleviation of the country.

Gas demand is increasing sharply keeping pace with the economic development and diversified use of gas. The Government of Bangladesh (GoB) is implementing Floating Storage and Regasification Unit (FSRU) based LNG import facility at Moheshkhali. However, the proposed FSRU of 500 MMCFD can only meet part of the growing demand for gas in power, fertilizer and industry. Thus there is a need for a reliable supply of gas.

To meet up the upcoming energy supply challenge, GoB has planned to construct land based LNG Re-gasification terminals at Moheshkhali and Kutubdia under Cox's-Bazar district and Payra under Patuakhali district each having 7.5 MTPA@ capacity 1000 MMSCFD. To accomplish the goal, GoB has initiated a process to appoint consulting firm to conduct a techno-economic feasibility study & engineering services for the project. LNG Cell has short listed 7(Seven) consulting firm and Request for Proposal (RFP) has already been issued. The consulting firm will also prepare a RFP for selecting a Land Based LNG Terminal Developer on BOOT basis. The Terminal Developer will construct the Land Based LNG Terminal and operate it.

1.2. SOURCE OF FUND:

The consultancy job will be financed from RPGCL's own fund.

1.3. ELIGIBILITY CRITERIA FOR SUBMISSION OF EOI APPLICATION:

Consulting Firms will be shortlisted based on the following experience/qualification criteria to be assessed from the documentation submitted with the Application together with verification as necessary:

- (a) Overall general experience of having been engaged in relevant field during last 10 (ten) years, preceding the date of submission of the EOI applications, in providing consultancy services in oil and gas industry especially in LNG sector, as either a single entity or a joint venture(JV) partner.
- (b) Specific experience of having successfully completed within last 10 (ten) years, preceding the date of submission of the EOI applications, at least 01 (one) experience of supervision, monitoring & Engineering services for techno-economic feasibility study for Land based Liquefied Natural Gas (LNG) Regasification, as either a single entity or a JV partner.
- (c) The firm shall have originated from an eligible source country (all countries of the world except those countries that has no Diplomatic relation with Bangladesh).
- (d) The qualification/experience of only the interested JV partners will be evaluated while the qualification/experience of the Sub-contractors or Sub-consultants or Associate firms will not be included in the evaluation process.
- (e) The applicant firm shall submit, as evidence of specific experience, concerned client's certificate stating satisfactory completion of the services including, as minimum, a brief

and clear description of Consultant's services together with duration of services from commencement to completion.

- (f) Request for Proposal (RFP) documents and relevant papers will be issued to the shortlisted firms only.
- (g) The firm appointed by LNG Cell, Petrobangla or any other designated entity for Techno-Economic Feasibility Study and Engineering Services work for construction of the Land Based LNG Terminals at Moheshkhali, Kutubdia of Cox's Bazar and Payra of Patuakhali is not Eligible for this services.

1.4. Submission of Applications for short-listing of Consulting Firms:

The Consulting Firm shall sign and stamp the Original EOI Application at all pages and submit the same in hard copy along with three more Copy documents and a soft copy in an envelope duly marking the envelope as **"EOI APPLICATION FOR SHORT LISTING OF CONSULTING FIRMS"** and addressed to the **"GM(Operation), RPGCL, RPGCL Bhaban (1st Floor), New Airport Road, Plot # 27, Nikunja-2, Khilkhet, Dhaka-1229, Bangladesh"** so as to reach his office within the submission deadline as specified in the EOI notice and bear the following identification:

Monitoring and Top-supervision of Techno-Economic Feasibility Study and Engineering Services Work of Consulting Firm appointed by LNG Cell, Petrobangla and selection of Terminal Developer or any other designated entity.

2.0 OBJECTIVES OF THE CONSULTING SERVICES

The objective of the engagement of an international consulting firm under this invitation is to entrust such firm with the complete responsibility of conducting a comprehensive and conclusive Monitoring and Top-supervision of Techno-Economic Feasibility Study and Engineering Services Work of Consulting Firm appointed by LNG Cell, Petrobangla and selection of Terminal Developer or any other designated entity.

This will also including necessary observation & investigations and specific recommendations for review of Techno-Economic Feasibility Study and Engineering Services Work of Consulting Firm appointed by LNG Cell, Petrobangla to assist RPGCL to have a better phase of observation and decision leading to subsequent steps towards the construction of land based LNG Terminals each RLNG capacity 1000 MMSCFD at Moheshkhali, Kutubdia of Cox's-Bazar and Payra, Patuakhali of Bangladesh.

3.0 Scope of Consultancy Works

3.1 Techno-economic Feasibility Study

The purpose of the techno-economic study is to evaluate options for setting up Land Based LNG Terminals and Regasification units in Moheshkhali, Kutubdia of Cox's Bazar and Payra of Patuakhali. The overall feasibility study will comprises a Site Selection Study and a Technology Selection Study. The consultant has to comment, review and recommend on the report, data collection and procedure done by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity. The consultant has to Monitor and Top supervision of the following subjects matter and issues:

3.1.1 Site Selection Study

The study of the previously appointed Consultant will explore all meteorological parameters of the proposed regions to recommend the most suitable location(s) for the proposed terminals, who will also evaluate the geotechnical parameters of the region as well as the water quality and marine condition. The consultant shall monitor, comment, review and recommend on the evaluation of sites for the Project involving following tasks:

- a) Collection of marine data for each site to determine the ease of marine navigation;
- b) Study of soil topography, seismic characteristics, and marine and soil erosion, as well as future port projects affecting the situation;
- c) Determination (from existing regional data) of yearly profiles of air and seawater temperatures, as well as atmospheric pressure ranges and rates of change; and
- d) Evaluation of space availability, marine safety, breakwater requirement, port security, and other environmental and topological constraints.

Comments, review and recommendation on the delivered report regarding Site Selection Study including Monitoring and Top Supervision should be done on the following tasks accomplished by the previously appointed Consultant:

- a) Site specific Bathymetry Study;
- b) Site Specific Geotechnical Assessment;
- c) Monthly statistics of weather data for temperature, pressure and humidity;
- d) Currents – Range of current speeds and directions for spring and neap tides
- e) Tide – Mean, Maximum High Spring and Minimum Low Neap Tide levels;
- f) Wind and Wave Statistics given;
- g) Tropical storm analysis;
- h) Water quality and marine aquatic data on a seasonal basis tropical storm analysis

Hence the consultant must review, comment and recommend on the delivered reports of the Site Selection Study done by the previously appointed or any other designated entity/ consultant.

3.1.2 Technology Selection Study:

Previously appointed Consultant by LNG cell, Petrobangla or any other designated entity will perform the Techno-economic Feasibility Study for setting up Land Based LNG Regasification Terminals which will include Site Selection Study exploring the technical and financial aspects of all available technologies. The consultant shall study supervise and monitor the tasks the report, procedure with thoroughly at their end to provide some of the inputs if necessary, provide feedback, comments and recommendations on the following technical aspects of study for the proposed terminals:

- a) Technology for storage and re-gasification of LNG;
- b) Jetty lay-out and design for berthing LNG carriers;
- c) Most cost effective and safe transfer mechanism of LNG from the supply vessel to the terminal;
- d) Dredging requirements;
- e) Assessment of need for breakwater and its initial design;
- f) Design Basis of LNG storage facility, Regasification facility, LNG unloading data, metering philosophy, power generation and requirement, marine facility;
- g) HSE Philosophy.

Based on the most suitable technology selected by this study, the Consultant shall also submit their comments and recommendation on the advised and proposed acceptable specifications for the supply of vessels that can be deployed for the import of LNG.

Previously appointed Consultant by LNG cell, Petrobangla or any other designated entity will complete tasks related to the CAPEX and OPEX estimates of all evaluated technologies shall cover all aspects of the project from unloading of LNG, storage, vaporization and transfer mechanism of natural gas to the grid line.

The Consultant shall also submit their comments and recommendation on their reports.

3.1.3 Field Data Collection procedure

The consultant has to comment, review and recommend on Field Data Collection procedure, system, propagation, implementation hands on basis and practical method undertaken by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity and hence the consultant has to do Monitor and Top supervision of the following subjects matter and issues and report, comment and recommend including the following for the preparation Techno-Economic Feasibility Study Report,:

- a) Proposal for Data Collection, Metrological, Ambient Temperature, Wind Speed and Directions, Rainfall
- b) Oceanographic, Bathymetry, Tides and Waves, Seabed Morphology, Sea Current Survey, Sedimentation Survey
- c) Hydrology, Deep water well survey, Floods, River Current Survey, Sedimentation Survey

- d) Terrain & Soil, Aerial Survey, Ordnance Survey, Gas Pipeline Route, Surface Geology, Topography Maps, Idea, Laboratory [Soils] Testing, Geotechnical Investigation
- e) Seismic, Soil Models and Geological Conditions, Location of Seismic Hazard Analysis
- f) Natural Resource Inventory, Construction Aggregates, Woods & Forest Resources
- g) Water Resources, Processing Facilities, Housing Complex, Construction Use and Hydro-testing, Earth Fill Resources, Evaluation and Clarifications for Data Collection

3.2 Environmental Impact Analysis (EIA) Study

The consultant has to comment, review and recommend on the report, data collection and procedure done by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity. The consultant shall do necessary task on Monitor and top supervision on purpose of obtaining Site Clearance and Environmental Clearance Certificates from Department of Environment, carry out process of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) studies.

As, the IEE and EIA study is intended to examine the suitability of the proposed site in respect of land availability, and ensuring environmental and community safety & balance, at inception and the entire period of the project to plant operation and entire project life; the consultant has to do necessary task on Monitor and top supervision during their tenure of contract and to ensure the environmental and social protection measures taken by previously appointed Consultant and to submit their recommendation and to ensure shall all step taken in accordance with the Environmental Conservation Rules of Bangladesh, national laws and legislations related to Land Acquisition and Resettlement and Safeguard Policy.

3.3 Relocation and Resettlement Study

There must be top supervision and monitoring, comment and recommend on the Resettlement Plan (RP) of examining the impacts of the plants and pipelines on government and private land, the magnitude of physical and economic displacement, the entitlement for compensation and the suitability of compensation done by previously appointed Consultant. The consultant has to submit their observation along with proper comments and recommendation on Pre-Front End Engineering Design (Pre-FEED) report by previously appointed Consultant by LNG cell, Petrobangla or any other designated entity. The consultant must continue their top supervision and monitoring on the following subjects and issues:

- a) Facilities Design Input Deliverables, Design Philosophies, Engineering System Design Guideline & Sizing Criteria, Equipment Design Guideline & Sizing Criteria, Applicable Industry Standard, Applicable Project Specifications, Expansion & Pre-Investment Philosophy,
- b) Project Design Data, Site Condition Parameter for Design, Site Location, Ambient Conditions at Site, Topography and Soil Investigation, Ocean and Meteorological, Met Ocean, Hydrology, Wind Rose, Seismic (Earthquake),
- c) Facilities Battery Limit Design Conditions, Unloaded LNG Specifications, Gas Delivery Specifications, Electrical Supply Specifications from Grid, Utilities and Fuel Supply Specifications to LNG Ship, Utilities and Fuel Supply Specifications to Marine Support Vessels, Utilities and Fuel Supply Specifications to Housing Complex, Well Water Quality Specification, Fire Sea Water Supply Specifications from Marine Tug Boats, Construction Fuels Specifications, Construction Waters Specifications,
- d) Utilities Requirement & Specification, Pre-commissioning, Commissioning and Start-up, Normal Operation, Unloading Mode Operation, Maintenance & Turn-around,
- e) Marine Facilities, Design Basis for all Marine Facilities stating water depth, load carrying and dimensional limitations, and frequency of loading., Bathymetry and topography map at jetty locations, Layouts showing locations of the LNG jetty, LCD and jetty (if required), HCD and pioneer requirements. Proposed areas to be dredged will be identified. Jetty and jetty-head cross-sections along with proposed pile and structural member sizes. Layout optimization study identifying base costs, assumptions and alternatives examined Sedimentation studies for any proposed dredging identifying proposed disposal areas, maintenance dredging volumes, frequency and costs. Construction methods assumed., Basic Port operating procedures in outline,
- f) LNG Unloading and Storage System, LNG Re-gasification System, Gas Sent-out System, Family Housing Complex,
- g) Infrastructure Definition Document, Plan Drawings, Layout Drawings, Architectural Sketches, Outline Specifications for All Major Buildings, Basic Definition of Functional, Requirements of Support Facilities, Sewage Treatment, Solid Waste Handling, Portable Water, Performance Data, Capacity, Capacity Turn

Down Ratio, Plant Reliability, Availability and Service Factor, Plant Losses and Thermal Efficiency, LNG Specification, Gas Specification, Units of Measurement, Information Management Systems

Based on the above study and procedure, the consultant must submit their comment and recommendation, review on delivered report by the previously appointed Consultant. Hence, the consultant must also continue their top supervision monitoring along with comments and recommendation on the following stage:

- a) Studies Deliverables, Marine;
- b) Harbor Entrance Dredging Requirement Study, LNG Carrier Berthing & Mooring Study, LNG Carrier Approach Channel Study, Marine Facilities Layout Optimization Study, Access Trestle Design Optimization Study, Sedimentation and Causeway Study, Wave, Tide & Current Study for Loading Arm Design, Break water study;
- c) Safety System, Ship-Shore ESD Hydraulic Surge Study, Vapor Cloud Dispersion Study;
- d) Process System, LNG Tank Containment System Selection Study;
- e) Design Deliverables, Owner's Reference Documents, Overall Layout;
- f) Project Design Basis and Design Philosophies Deliverables, Design Basis, Project Data
- g) Units of Measurement, Basis of Design, Project Design Data, Preliminary Equipment List, Design Philosophies, Standard for the Storage and Handling of Liquefied Natural Gas (LNG), Installation and Equipment for Liquefied Natural Gas - Design of Onshore Installations, Safety Requirements at LNG Terminals, Telecommunications Systems Philosophy, Electrical System Philosophy, Information Management Systems (IMS) Philosophy, Environmental Philosophy, Overall Design and Operating Philosophy, Plant Utilities Philosophy, Availability and Sparing Philosophy, Plant Layout Philosophy, Maintainability Philosophy, Emergency Shutdown and De-pressuring Systems Philosophy, Safety Instrumented Systems Philosophy;
- h) Process Control Systems Philosophy, Future Expansion Philosophy, Instrumentation and Analytical Systems Philosophy, Design Margin Philosophy, Material Selection and Corrosion Protection Philosophy, Overpressure Protection, Flare and Vent Philosophy;
- i) Overall Facilities Design Deliverables, Applicable Codes and Standards, General Documentation Symbols & Legends, Overall Project Schedule, Finalized Project Philosophies, Master Plan Drawings for all Facilities, Overall Plant Layout Drawing;
- j) Master Schedule of all Regulatory Permits, Train Layout Drawing, Overall Plant 3D Model;
- k) Process Design Deliverables, Process Block Flow Diagrams, Utilities Block Flow Diagrams, Design Basis, Utility Consumption/Requirement Summary, Process Heat and Material Balances, Process Descriptions, Process Flow Diagrams (PFDs) , Utilities Flow Diagrams;
- l) Electrical Design Deliverables, Electrical Design Basis, Electrical One-Line Diagrams;
- m) Civil, Structural, and Architectural Design Deliverables, Buildings List, Site Preparation and Earth Work Specifications, Marine Facility Layout, Tanker Mooring Layout, Ship Channels Layout, Design Basis for Major Equipment Foundations, Gangway Envelope, Three Dimensional Loading Envelope, Bill of Materials for Concrete, Structural Steel, Earthworks, Dredging, etc.
- n) Piping and Mechanical Design Deliverables, Process Equipment List, Utilities Equipment List, Pipe Stress Analysis for Critical Lines, Equipment Layout Drawings, Equipment and Piping Electronic 3D Model, Equipment Data Sheets;
- o) Control System Design Deliverables, Instrumentation and Control System Design Basis, Conceptual Layout Drawings, Control System Functional Block Diagram, Equipment List (Instruments, DCS, Analyzers, etc);
- p) Telecommunication System Design Deliverables, Telecommunication Systems Design Basis;
- q) Information System Design Deliverables, Information Management System Design Basis;
- r) 100 Year Wind Wave and Current Characteristics, Environmental Impact Assessment;
- s) Marine Facilities - Wave Analysis, Foundation Study, Explanation of Wind Roses;
- t) Sonar Survey Seabed Features, Sonar Survey Bathymetry, Capital Cost Estimate, Oceanographic & Meteorological Investigation, Hydrographic & Geophysical - Site Survey Report, Causeway and Sedimentation Studies, Sea Water Cooling Recirculation Study, LNG Vaporizer & Heating Medium Selection Study, Spacing Requirements for LNG Storage Tanks, Water Discharge Quality Standards, Applicable Codes for LNG Receiving Terminal Design;
- u) LNG Plant Interfaces, List of industry codes and standards, recommended practices, law and regulations, National Regulations, International Codes, Standards, and Recommended Practices.

3.4. Terminal Developer selection:

The consultant shall have to accomplish the entire task related to selection of Terminal Developer, Negotiation up to signing the contract as well. They must submit comments and recommendation on the RFP Document for Selecting Terminal Developer on BOOT basis prepared by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity to find out the best Terminal Developer. Hence, the objective of this task is to check, review, observe and recommend on

the submitted bids documents for the Request for Proposal (RFP) early done the previously appointed consultant or any other entity. Moreover, the RFP documentation will consist or included, but not necessarily be limited to, the following:

- a) General Information, Information for Bidders, Definitions, Gas Sector in Bangladesh, Project Description, LNG Regasification Tariff and Payment, Project Development,
- b) Instructions to Bidders, Consortium Formation, Selection Process, Proposal Preparation Costs, Site Due Diligence, Bidder's Eligibility and Responsibilities, Clarifications and Amendments, Bidders' Conference, Proposal Preparation, Proposal Submission, Proposal Opening and Evaluation, Selection Process
- c) LNG Import Terminal Functional Specifications, Project Information and Scope, Design Philosophy and Principles, Technical Requirements, Quality Assurance, Inspection, Commissioning and Testing, Maritime Data, Site Data, Project Administration
- d) Bidder's Proposal and Supporting Data, Proposal Letter, list of Attachments, Form of Bid Security, Proposal Opening Form, LNG Regasification Tariff Proposal, Financial Data in Support of the Project, Technical Data and Submittals, Proposed Staffing Plan, Additional Supporting Data, Exceptions to RFP Documents, Bidder's Project Development Schedule
- e) Draft Project Agreements, Draft Project Implementation Agreement, Draft Sponsor Shareholder Agreement, Draft LNG Services Agreement

So, based on the above, the consultant must submit their comments and recommendation on delivered report by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity hence to propose a road map and guideline for Monitoring and Top supervision for the following tasks for best Terminal Developer selection:

- The consultant must recommend the documentation procedure of the prospective terminal development companies, who would have expressed an interest in developing the Project, Operate it and Transfer (BOOT) basis.
- To provide with procedure and Road Map Top supervision and monitoring of Construction works, commissioning and Operation of LNG Terminal Developer for Land based LNG Terminal.
- To do other related works for Land based LNG Terminal requested by the client.
- The objective of this task is to check, review, observe and recommend bids on the Request for Proposal (RFP).
- The consultant shall have to accomplish the entire task related to selection of Terminal Developer,
- Negotiation with the prospective bidder along with the client up to signing of the contract as well.

However, the consultant is to be acquainted with the Public Procurement Act and Regulation of Bangladesh.

3.5 Project Cost Estimate with Financial & Economic and Business Risk Analysis

3.5.1 The Project Cost Estimates:

It will be accomplished by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity. The previously appointed Consultant will submit the capital investment cost for the Project including necessary contingencies and related rationale within acceptable accuracy limits (cost estimate for the Project shall have accuracy of +/- 15 %), expressed in value of money at the time of preparation of the Feasibility Study. Capital costs will be provided for, but not necessarily limited to, the following components:

- a) LNG marine and unloading facilities
- b) Interconnecting pipeline linking marine facilities to the LNG receiving terminal
- c) LNG storage tanks
- d) Boil-off-gas recovery
- e) LNG pumping
- f) LNG vaporization
- g) Power generation
- h) Utilities
- i) Communications and security systems
- j) Fire prevention & safety facilities
- k) Re-gasified LNG compression facilities,
- l) Re-gasified LNG metering facilities
- m) Mechanical, electrical and instrumentation
- n) Custody transfer systems

- o) Building and Infrastructure
- p) Interconnecting pipeline for evacuation of Re-gasified LNG and tie-in with the national gas transmission network
- q) Annual fixed and variable operating costs sub-divided to show the following: operating personnel, inspection and maintenance, consumables, insurance, local taxes, general and administration.

The cost of each of the above items will be broken down into equipment, bulk material, and construction, labour, miscellaneous and other relevant cost components as applicable including clear indication of various taxes and duties in estimated cost and also each of the above items costs will be incurred in local Bangladesh Taka and in US Dollars.

Hence, the consultant must submit their comments, review, and recommendations on delivered report submitted Related to the Project Cost Estimates.

3.5.2 Economic Analysis including following stage:

It will be accomplished by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity. The detailed economic analysis of the Project to determine the tariff for LNG re-gasification, recommendation to Petrobangla concerning the overall economic viability of the Project will be there. On the basis of the findings of as stated 6.1 on the capital investment costs and operation and maintenance (O&M) costs for the LNG terminal will also be there along with mathematical models suitable for economic analysis of green field LNG projects, and for testing sensitivities regarding key study assumptions and Project drivers, including the Project's economics, its returns on investment, and its level of safety for coverage of debt service obligations. The data used by these models will be, but not be limited to, the following:

- a) Financing structure and financing costs;
- b) Exchange rates;
- c) Input costs (including ocean transportation and other related components);
- d) Cost and price inflation;
- e) Fixed and variable operating costs;
- f) Capital costs;
- g) Demand and throughput volumes; and
- h) Bangladeshi tax and fiscal regime.

Hence, the consultant must submit their comments, review and recommendations on delivered report submitted Related to Economic Analysis.

3.5.3 Financial Analysis

The consultant must submit their comment and recommendation on delivered report Economic Analysis, Financial Analysis done by the previously appointed Consultant by LNG cell, Petrobangla or any other designated entity.

3.5.4 Project Risk Analysis

The consultant must submit their comment and recommendation on delivered report Project Risk Analysis Consultant by LNG cell, Petrobangla or any other designated entity.

7. Deliverables

Report on the economic viability and implementation financing needs of the Project, with a plan and recommendations on the optimal types, sources, and mix of financing plus full risk analysis and possible risk mitigation strategies.

8. Client Team LNG Capacity Building

Currently, RPGCL has no expertise in the development and operation of LNG import terminal projects. The objective of this task is for the Consultant to prepare and deliver the required tools and processes to ensure that RPGCL is capable of operating and maintaining the Project to international industry standards and best practices.

The capacity building process needs to provide the tools and equipment for Foreign and Local training of 10 (ten) personnel each in the operations and maintenance of an LNG import and re-gasification terminal. As such the capacity building process will need to include the following:

- a) design a training course syllabus in consultation with relevant departments;
- b) prepare training course materials;
- c) carry out the training programme, and
- d) Evaluate the effectiveness of the capacity building program.

4.0 SUBMISSION OF EOI APPLICATIONS

4.1 The applicant Consulting Firm shall submit its Application along with following documents:

- a) Letter of Application (Form A);
- b) Basic Data Sheet of the Consulting Firm (Form B);
- c) Key Professional Staff of the Consulting Firm (Form C);
- d) General & Specific Experiences of the Consulting Firm (Form D);
- e) In case of joint venture(JV), an appropriate Declaration of Intent to work as a JV in the event of award of contract, signed by all JV partners mentioning the name of the lead partner and the name of the authorized signatory;
- f) Certificate of Incorporation
- g) Trade license certificate / Business license;
- h) Organization chart showing professional strength;
- i) Colored brochure;
- j) List of sub-contractor and/or sub-consultant along with their detailed experiences in the relevant field; and
- k) Other documents as required and mention in EOI document.

4.2 All pages of the original EOI application shall be signed and sealed by the applicant firm. In case of JV, each partner shall sign and seal the respective documents and then the documents shall be countersigned by the authorized representative of the JV whose name and position should be clearly mentioned in the Declaration of Intent.

5.0 DURATION OF CONSULTANT'S SERVICES

The study is to be commenced immediately after signing of Contract and completed within 48 (forty eight) months from the contract signing date excluding the concurrence/approval time to be needed by RPGCL in between stages of report submission as described in Section 6.0 below. The consultant's team is required to be mobilized immediately after the award of contract.

6.0 REPORTING REQUIREMENTS

The following reports are required to be prepared by the Consulting Firm and submitted to RPGCL:

- a) Inception Report is to be submitted within 30 (thirty) days from the date of signing of the contract;
- b) Interim report is to be submitted at every 6 (six) months from the date of signing of the contract;
- c) Draft final report together with all survey and investigation reports is to be submitted within 45(forty five) months from the date of signing of the contract;

- d) Final report with conclusive analysis and recommendations covering all aspects of the study is to be submitted within 15(fifteen) days from the date of client's concurrence/approval on the draft final report;
- e) Additionally monthly progress report is to be submitted during the periods of (a), (b) and (c) above;
- f) The consulting firm will be needed to make presentations of its reports to RPGCL at all above stages as necessary;
- g) All reports and presentation copy are to be submitted in editable electronic soft copy, PDF copy and 5 (five) hard copies.

7.0 EXPERTISE REQUIREMENT

A field-wise list and person-months requirements of International experts for each field needed to accomplish the complete task of the Monitoring and Top-supervision of Techno-Economic Feasibility Study and Engineering Services Work of Consulting Firm appointed by LNG Cell, Petrobangla and selection of Terminal Developer or any other designated entity shall be proposed by the applicant consulting firms in the EOI application. This would be reviewed by RPGCL and the specific requirements in this regard will be mentioned in the RFP document to be issued to short-listed firms at a later stage.

Section – C
Formats of Applications

Form A: Letter of Application

Engr. A.I.M Nurullah
GM(Operation)
Rupantarita Prakritik Gas Company Ltd.(RPGCL),
RPGCL Bhaban (1st Floor), New Airport Road,
Plot # 27, Nikunja-2, Khilkhet, Dhaka-1229,
Bangladesh

Name of Work: Expressions of interest (EOI) for Monitoring and Top-supervision of Techno-Economic Feasibility Study and Engineering Services Work of Consulting Firm appointed by LNG Cell, Petrobangla or any other designated entity and selection of Terminal Developer for land based LNG Terminals at Moheshkhali, Kutubdia Cox's-Bazar and Payra, Patuakhali of Bangladesh.

Dear Sir,

Having examined the notice inviting applications for appointment of Consulting Firm for the subject services, we **[Firm/JV name with address]** hereby submit this EOI application along with the statements and related documents as required by the Employer/Procuring Entity.

We understand that the decision and discretion applied by the Employer in evaluation of the applications and grading the applicants are absolute and can't be disputed by or appealed against by the applicant.

Yours sincerely,

[Signature of the authorized representative of Consulting Firm/ JV]

Name:

Position:.....

Date:

Address:

[STAMP]

Form B: Basic Data Sheet of the Consulting Firm

(In case of JV, separate statement of each partner shall have to be submitted)

1. a) Name of the Consulting Firm :
b) Name of the JV :
2. Address in full
a) Head Office :
b) Branch Regional Office(s) (if any) :
3. Telephone no. :
4. Fax No., E-mail/Web site etc. :
5. Date and place of incorporation/ registration of the Firm (proper documents to be enclosed) :
6. Status and organizational structure of the Firm (Whether limited Co./ Partnership or Proprietorship) :
7. Organizational Chart of the Firm :
8. Valid Trade / business license (Copy to be furnished) :
9. Colored Brochure of the Firm :
10. Total permanent staff number of the Firm :
11. Years of Experience in the relevant field :

**Signature of the authorized representative of
Consulting Firm/ JV with date and seal**

Form C: Key Professional Staff of the Consulting Firm

(Experienced in LNG Project Feasibility Study, Design, Development and Operation)

(In case of JV, separate statement of each partner shall have to be submitted)

Sl. No.	Name and proposed position of the expert	Age	Educational Qualifications	Total years of experience in the overall Oil, & Gas Industry	Total years of experience in LNG related consultancy services	Total years of service in the present firm	Description of Experiences
1	2	3	4	5	6	7	8

**Signature of the authorized representative of
Consulting Firm/ JV with date and seal**

Notes:

1. Details of experiences under columns 5 & 6 to be clearly and separately described in Column 8 (use additional sheets, if required) which shall include the project name, role of the expert, duration of services etc.
2. Applicant firm is also requested to input information as per the above formats for all proposed experts as requested in the EOI document.

Form D: General & Specific Experiences of the Consulting Firm

(In case of JV, separate statement of each partner shall have to be submitted)

Form D1: General Consultancy Experiences in the Oil & Gas Industry

Name of client with postal address, email, phone and fax	Project / Assignment Name	Brief and clear description of services rendered by the Consulting Firm	Start Date (Month/Year)	Completion Date (Month/Year)

Form D2: Specific Experiences in Land Based LNG Import Terminal Feasibility Study

Name of client with postal address, email, phone and fax	Project / Assignment Name	Capacity (MTPA)	Brief and clear description of services rendered by the Consulting Firm	Start Date (Month/Year)	Completion Date (Month/Year)

Signature of the authorized representative of Consulting Firm with date and seal

- Notes:**
1. The above Forms should be filled out with information of relevant projects only and as many number of relevant project experiences as available may be included in the Forms without any limitation.
 2. At least one specific experience mentioned in Form D2 above must be evidenced by the submission of concerned client's certificate stating satisfactory completion of the services including, as minimum, a brief and clear description of Consultant's services together with duration of services from commencement to completion.