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**OIL AND GAS DEVELOPMENT COMPANY LIMITED (OGDCL)**

**INVITATION TO BID PROPOSAL FOR HIRING OF ENGINEERING**

**CONSULTANT**

**THROUGH PRESS TENDERING**

**DARU-MANGRIO GAS PROCESSING FACILITY & LPG EXTRACTION**

**PROJECT**

**Tender Enquiry No, ( \_\_\_\_\_ )**

**Dated: March 09, 2021**

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**Daru-Mangrio Processing Facility & LPG Extraction Project**  
**TOR/Scope of Work**

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**SCOPE OF WORK (SOW) /TERMS OF REFERENCE (TOR)**



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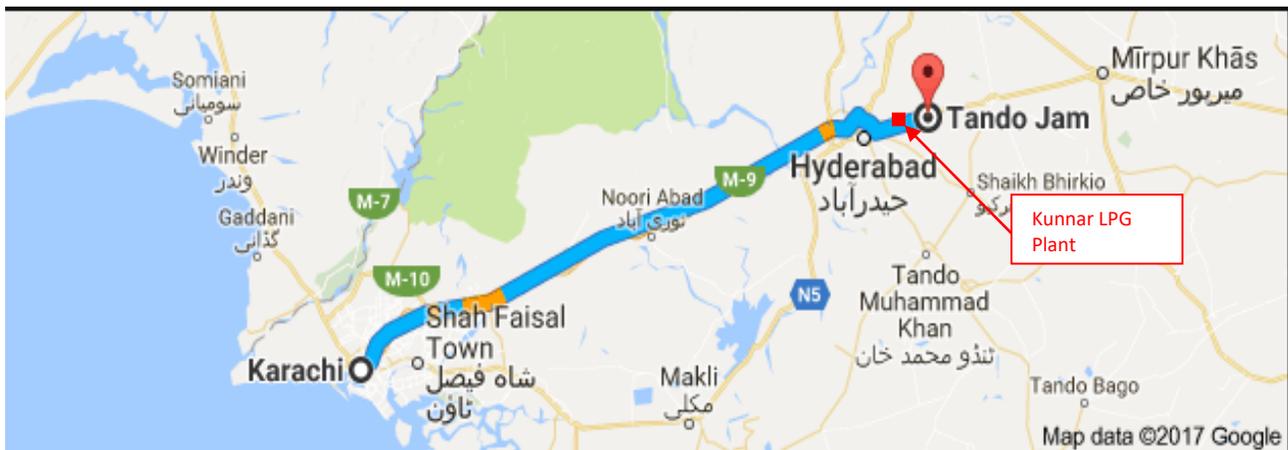
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## 1.0 INTRODUCTION

Oil and Gas Development Company Ltd (OGDCL) hereinafter called COMPANY is Pakistan’s leading E&P upstream company, having functions / operations at about 50 locations and fields in all the four provinces of Pakistan. The COMPANY is the market leader in terms of acreage reserves and oil & gas processing infrastructure while being actively engaged in exploration and drilling activities as well. More details about the Company can be obtained from its website [www.ogdcl.com](http://www.ogdcl.com).

## 2.0 BRIEF OF KUNNAR LPG PLANT

Kunnar LPG Plant is located in Tando Jam adjacent to KPD-TAY Integrated Plant which is about 25 km away from Hyderabad and approx. 195 km from Karachi, Sindh Province of Pakistan. Kunnar LPG Plant. Kunnar Oil field was established in early 1990’s. Existing Kunnar LPG Plant has approximately 14 MMSCFD raw gas handling capacity capable of producing 30-35 MTPD LPG. More Details about Plant Equipment and Drawing Documents given in Clause 18.1 (Attachments) of TOR/Scope of work.



*Figure 1: Location of the Kunnar LPG Plant*

## 3.0 BRIEF OF DARU CENTRAL FACILITY

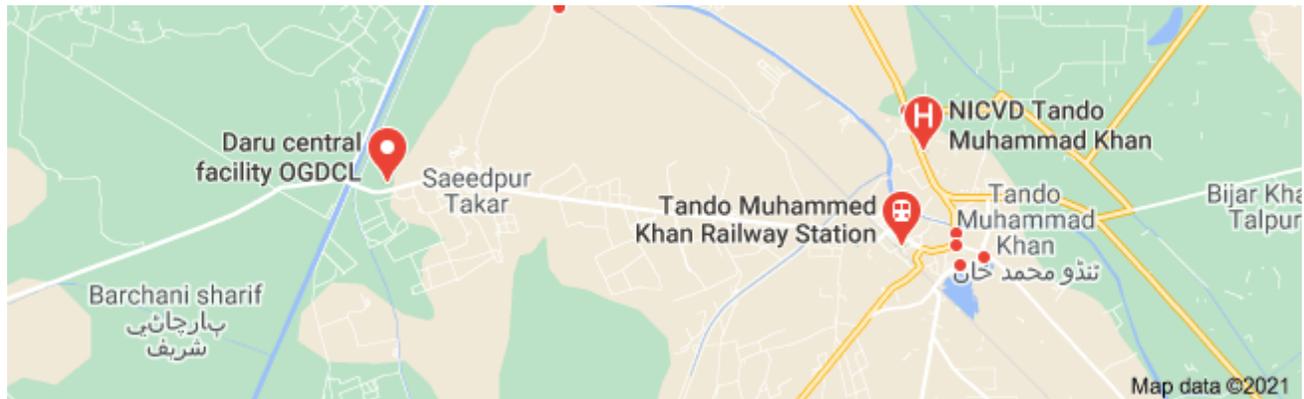
NIM exploration license is a joint venture of OGDCL & GHPL with working interest 77.5 % and 22.5% and OGDCL is operator. The wells Daru-1 (100% OGDCL) Chhutto-1 and Mangrio-1&2 (J.V GHPL) of NIM-E.L

Daru-Mangrio Central Facility is located in Tando Muhammad Khan District in the southern part of Sindh province in Pakistan about 30 km in north of the Hyderabad City. Daru gas field was discovered in late 1988 in Nim block of Sanghar concession.

Daru gas field was put on regular production October 25, 1999, and the field Production was 11 MMSCF/D of Gas and 450 BOPD of OIL at the point of time and the produced gas was supplied to M/S SSGCL and Oil to Pakistan Refinery Limited.

Currently Daru-02 , Daru-03 , Noorai Jagir , Nim and Dachrapur Wells are shut-in and Daru-01 (which is recently become operational again) , Chutto-01 and Mangrio-01 are operational providing a raw gas production of approximately 17.8 MMSCFD.

Daru Facility is presently processing the gas of three wells through dehydration unit along with separator battery of each well with a front end compressor of a low-pressure well of Daru-1 and providing presently a total raw gas production of approximately 17.8 MMSCFD. More details are provided in Process Description Report (Attachment-I) of clause 18.2 of TOR/Scope of work.



*Figure 2: Location of Daru Central Facility*

#### **4.0 OBJECTIVE OF PROJECT**

OGDCL intends to relocate its redundant available Kunnar LPG plant to Daru processing facility. The Installation of LPG plant at Daru Facility will aid in the production of LPG and it will also increase NGL recovery.

Considering the nature of the works involved in the project, Oil and Gas Development Company Limited (OGDCL) hereinafter referred to as “COMPANY” requests that the services be provided in two (02) Phases as listed under, whereby the mobilization of project towards Phase-I (Stage 2) and Phase-II shall be subjected to approval of Phase-I (stage 1) from the Company.



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Phase-wise description of scope is provided in the succeeding Sub-sections below:

**Phase-I: Feasibility Study, Engineering Design & Preparation of PCC Contract (ITB):**

- Assessment/Adequacy of relocated items & completeness of facility, Front End Engineering (FEED), Detailed Engineering and Preparation of tender documents (ITB) for hiring of PCC contractor

**Phase-II: Bidding Services and Project Management / Supervision. Technical & Commercial Evaluation:**

- Preparation & Finalization of Contract
- Project Management till Completion of the Project.
- Site Supervision Construction Phase
- Site Supervision Pre-Commissioning & Commissioning Phase
- Project Close Out report & all related final Documentation

Sealed Bids are hereby invited under Single Stage Two (02) Envelop bidding system (I.e Technical & Financial Bids in separate envelopes).

This Invitations to Bid Proposal (ITB) for a Consultant defines the expected scope of services in each of the phases, as detailed hereunder.

## **5.0 CONSULTANT SCOPE OF WORK**

### **5.1 General**

Consultant shall perform thorough field visit and meeting of the Kunnar LPG Plant site and Daru Facility which including review of drawings and documents provided in this Tender Document and as available at site for any missing / deficient or additional design engineering and drawing may require and shall develop the same for successful completion and commissioning of the Project meeting all functional requirement of the integrated plant. All available drawings are in PDF format. Consultant shall convert / reproduce these drawings in auto cad version for further development to depict as-built conditions.

Consultant shall prepare all the relevant documents for the OGRA compliance for the new facility of LPG Installation at Daru Central Facility (DCF).



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Consultant must adhere to and provide relevant deliverables at each Phase as mentioned in subsequent section of this document as well as any other which it may deem necessary for successful execution/ completion of the project.

The essence of scope of work for consultant is described to analyze existing Kunnar LPG plant data with new wells (Daru, Chuttoo and Mangrio) feed. Perform project feasibility in terms of operational. Technical and financial analysis. Considering project feasible as a result of the above study, perform front end engineering, detailed engineering, Construction and supervision package including invitation to bid (ITB) for hiring of PCC Contractor

The Consultant to develop the means and methods for implementing the DARU CENTRAL FACILITY Project on single point responsibility basis for all requisite Works / Services. Any gap in the ITB requirements shall be identified by the bidders at pre-bid/post bid meetings. Any work or detail, which is not expressly set forth, but necessary for plant relocation and commissioning to the scope attributable to the Consultant in true intent and meaning of the Project / ITB document, shall be performed by Consultant without extra charge and schedule impact to The Company.

Consultant shall acknowledge that detailed visit of Kunnar-LPG and all documents provided by the COMPANY have been reviewed at the bidding stage and cost of removing any errors, omissions, and/or discrepancies to make them fit for intended purpose has been included in the Contract price.

**In addition to the Content of this Document, the Consultant must adhere to and provide relevant deliverables at each Phase as well as any other which it may deem necessary for successful execution/ completion of the project.**

## **5.2 Pre-Bid Site Visit**

Bidder shall carry out site visit of Kunnar and Daru facility for visual survey and understanding of COMPANY requirement. Bidder shall acknowledge that detailed visit of Kunnar-LPG and all documents provided by the COMPANY have been reviewed at the bidding stage and cost of removing any errors, omissions, and/or discrepancies to make them fit for intended purpose has been included in the Contract price.

Consultants to evaluate adequacy of available area in Daru vicinity and submit the following as required:

- **In case land area is adequate:** Consultant to submit Statement of adequacy of existing area along with preliminary plot plan



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- **In case land area is inadequate:** Consultant to submit Proposal of additional land area required along with preliminary plot plan

### **5.3 Kick-Off Meeting**

A kick-off meeting with the Consultant's Daru-Mangrio Central Facility LPG Project shall be initiated once the project is awarded to Consultant.

The meeting agenda shall include, but not limited to, the following items:

- Introduce OGDCL Project team and the Consultant's Key Team Members
- Review of drawings and documents provided in this Tender Document for any missing / deficient or additional design engineering and drawing requirement and to develop the same for successful completion and commissioning of the Project meeting all functional requirement of the integrated plant
- Determine Schedules for Consultant Phase wise design Submittals
- Identify any other Project Requirements
- Establish and schedule regular/periodic design meetings
- Identify Budget and Design expectations
- Distribution of design documents (in a timely manner).

### **5.4 Phase-1 (Stage-1): (Preparation of As-Built, Study assessment/adequacy & suitability of Kunnar LPG Plant and additional requirement of relocated LPG recovery plant at Drau Central Facility).**

#### **5.4.1 General:**

Consultant shall review of drawings and documents provided in this Tender Document for any missing / deficient or additional design engineering and drawing requirement and shall develop the same for successful completion and commissioning of the Project meeting all functional requirement of the integrated plant. All drawings (whichever are available) are in PDF format. Consultant shall reproduce these drawings in auto cad version for further development to depict as- built conditions.

Consultant shall prepare all the relevant documents for the OGRA compliance for the new facility of LGP Installation at DCF.

Consultant shall acknowledge that detailed visit of KNR-LPG and all documents provided by the OGDCL have been reviewed at the bidding stage and cost of removing any errors, omissions, and/or discrepancies to make them fit for intended purpose has been included in the Contract price.



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During Phase-I (Stage-1) of the project the Consultant shall review the existing documents of the redundant LPG plant located at Kunnar Sire for adequacy and suitability. The Phase-I stage-1 shall be the basis on which the Company shall evaluate the future projections of the Project.

**5.4.2 Deliverable:**

Following points along with relevant deliverables as mentioned below must be treated as minimum requirements of Phase-I (stage-1), however the consultant must identify and provide any additional data which it may deem necessary for successful execution of the project:

- Preparation of As-built Documents of Kunnar plant.
- Verification of As-Built Documents of Daru Central Facility (DCF) in case of any deficiency.
- Process Suitability of existing Kunnar LPG Unit Equipment including capacities, sizes, and adequacy with respect to Daru Gas feed (Composition) This includes:
  - i. Process simulations of integrated scheme at summer and winter condition. Development of HMB for integrated scheme at Daru Facility.
  - ii. Consultant shall carry out simulation at Do Noting Case and also evaluate various option for increase LPG recovery and identify bottlenecks and suggest cost effective increase LPG recovery plant with CAPEX , OPEX and Pay back estimation.
  - iii. Rating and evaluation of Equipment and Item at new process condition
  - iv. Evaluation of utilities and off site of Daru Facility including Control System and Power Generation
  - v. Evaluation of relief and Blow down system of Daru Central Facility.



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- vi. High Level specification of additional utilities required for successful integration and operation of LPG plant at Daru Central facility.
- Plant completion Assessment in terms of required equipment/systems. COMPANY may offer redundant material/equipment/machines located at different sites of OGDCL, therefore the Consultant shall be responsible to visit the different sites all over Pakistan, collect necessary information and evaluate the material/equipment/machines for adequacy.
  - Cost Benefit analysis: Relocation of Kunnar LPG Plant and installation of additional equipment and items for completeness LPG recovery plant at Daru Facility with respect to life cycle of contributed well and estimated LPG recovery.
  - Adequacy check on Daru Facility's existing utilities and off sites to fulfill additional requirement of relocated LPG recovery plant.
  - Identify required modification and replacement of any item of relocated Plant/equipment.
  - Development of PFDs and P&IDs for integration scheme at Daru Facility (multiple options, as necessary).
  - Proposed modified Plot Plan at Daru Facility with integration of Kunnar Plant. Consultant shall identify if any additional land requirement at Phase-I (stage 1)
  - Compilation and submission of Preliminary Feasibility Study Report (Conceptual) and submission to the Company for review and approval.
  - The feasibility report shall be focused on the Economic evaluation of the project in terms of total life of plant, operational feasibility assessment under the influencing parameters as well as the project schedule feasibility. The report should cover all aspects including pros and cons of such a project to be undertaken.
  - Class 4 estimates of the Project and Level -I implementation plan.

***After the completion of Study assessment/adequacy & suitability of Kunnar LPG Plant***



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*phase I (Stage 1) and its subsequent review and acceptance by the Company, if and only if the company finds the project viable and decides to move forward and proceed with the execution of the project, of which the Company reserves the right to decide (whether or not to proceed with the project) in its entirety, regardless of what is mentioned in the Feasibility report. The Consultant will then be responsible to initiate phase-I (stage 2) i.e. carrying out Soil investigation, topographic survey by engaging third party, preparation of Front End Engineering (FEED), phase-I (stage 3) Detailed Engineering and phase-I (stage 4) Preparation of PCC Tender Documents.*

**5.5 Phase-I: (Stage-2): FEED/Basis of Design**

The phase-I (stage 2) shall involve the following activities which may be considered as a non-exhaustive list of activities to be undertaken by the CONSULTANT.

**5.5.1 Soil Investigation:**

A site topographical and geotechnical survey should be carried out during the Phase-I (stage 2) activities by the Consultant in order to acquire information regarding the physical characteristics of soil, assess the site situation and planning civil works to be carried out for setting up new plant at Daru Facility is in Consultant's scope.

**5.5.2 Topography Survey:**

A site topographical shall be carried out during the Phase-I (stage 2) activities by the Consultant. Consultant shall develop Grading layout of proposed area of installation and estimate require cut and fill volume.

**5.5.3 FEED/ Basis of Design:**

Consultant is required to confirm as part of FEED, process simulation models, project feasibility with technical and economic model. Completion of basic engineering package including adequacy of existing equipment and preparation of new engineering deliverable and reference list of applicable codes and standards; International codes, standards, best practice and guidelines.

Subject to the COMPANY approval and finalization of relocation scheme proposed in Phase-I (stage 2), following activities are envisaged as outlined in chronological order:

- Validation / Confirmation of Process Simulation Heat and Mass Balances of



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Phase I (stage 1).

- Sizing and Selection of new items and equipment
- Preparation specification and Data sheet of new items and equipments
- Detailed evaluation of Existing Kunnar process Plant Equipment including capacities, sizes, and adequacy with respect to Daru Gas feed
- Detailed operational analysis of the equipment to be modified/procured/relocated under the new parameters.
- Finalization of PFDs and P&IDs at Daru.
- Development of Cause and Effect Documents and Control Narrative
- Development of Equipment Process Datasheets as well as Mechanical Datasheets for the equipment to be procured as well as for the equipment to be modified.
- Evaluation of items required at Daru Central Facility to meet required gas and liquid hydrocarbon specifications.
- Arrangement of procured and relocated equipment on the Plot plan while considering the safety requirements as set out in the guiding standards and OGRA regulations.
- Visual survey and detailed physical assessment of existing unit / equipment.
- Formulation for scope of work for any testing required to be performed for existing unit / equipment.
- Updation of list of equipment required to be replaced (procured new) and / or to be repaired / refurbished / modified based on results of physical assessment.
- Perform all necessary process & design calculations and simulations to define equipment or system requirement or to demonstrate the adequacy of the proposed design and selection of the facility equipment.
- Class 3 estimates of the Project



#### **5.5.4 HAZOP Study for Daru Central Facility**

Consultant shall carry out HAZOP studies of the Project by an independent specialist consultant (approved by the Company) and implement all the HAZOP action points at no cost to the Company. The following, but not limited to, documents must be reviewed in the HAZOP Study meeting:

- a. Basis of Design
- b. PFD(s) and H&MB
- c. Operating Control & Safeguarding Philosophy
- d. ESD and F&G system
- e. PDS
- f. UFD(s)
- g. P&ID(s)
- h. C&E Matrix
- i. Plot Plan(s)
- j. Hazardous Area Classification Drawings

The Consultant shall provide HAZOP report for the COMPANY review and approval. Consultant must ensure that all recommendations of HAZOP study are implemented/ incorporated in the proposed design.

#### **5.6 Phase 1 (Stage-3): Detailed Engineering Design**

##### **5.6.1 General**

Consultant shall be responsible for Design and Engineering of including but not limited to all engineering and design services necessary to complete the project in conformity with the requirements indicated within this Scope of Work.

Verification of available design data, seek clarifications on inconsistencies, additional information required to complete the work, conduct site visit to familiarize himself with site details and sociopolitical aspects.

Perform all necessary process & design calculations and simulations to define equipment or system requirement or to demonstrate the adequacy of the proposed design and selection of the facility equipment.



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The summary of scope of detailed engineering design of Daru Central Facility includes but not limited to the following:

- Detailed design and engineering work for dismantling, relocation and commissioning of Kunnar LPG plant at Daru Well site which includes but not limited to review of existing drawings / documents for completeness / sufficiency for relocation of KNR-LPG.
- Preparation of new / missing documents and drawings, As-Built drawings.
- Updating (As-Built), completing, re-drawing of design documents and drawings provided by THE COMPANY (If Any). Any additional design document and engineering works required for dismantling, transporting, installation, pre-commissioning, commissioning and start-up of relocated plant.
- Preparation of detail engineering design with existing equipment, dismantling plan of existing packages, relocation plan of packages, hook-up design for relocated equipment with additional process.
- Detailed design and engineering works required for additional equipment required.
- Verification of available design data, seek clarifications on inconsistencies, additional information required to complete the work, conduct site visit to familiarize himself with site details.
- Identification and provision of Hazardous area classification in the Plot Plan for Daru Facility.
- Design of control room, workshops, laboratory, stores / warehouse at Daru Central Facility if required in Feed Study
- Consequence modeling and Detailed Engineering design of Fire Water System including but not limited to Fire Water Tanks, Fire Water Pumps, Hydrant , Monitor , Foam system etc
- Detailed Design of Condensate Stabilization, LPG Storage and Loading system if identify in FEED study.
- Design and identification of additional piping material (line pipes, fittings, valves,



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etc.) for Additional Equipment as well as relocated plant.

- Detailed engineering documents of all instruments including field instruments, junction boxes, cables, cable trays and conduits, control panels and all material required to install in the field and control room.
- Detailing, calculations and preparing procedures for implementing changes and to avoid field mismatches.
- Preparation and issuance of all necessary MTO's, requisitions, and other technical documents for the procurement of equipment and bulk material.
- Preparation and issuance of BOQs of all perishable items which are necessary to be procured for the successful installation, erection, relocation, fabrication and commissioning of the relocated plant.
- Consultant shall plan and provide all necessary tie-in points for installation of relocated plant. Development of plot plan and plant layout drawings.
- Validation of existing and / or re-designing of civil foundations for implementation at soil conditions of proposed plant location, additional / missing foundation design / drawings.
- Preparation of detailed construction / installation drawings, including, foundation drawing, P&IDs, piping layouts, isometrics, layout plan, etc. of all equipment including civil foundation works, mechanical, structural steel, piping and E&I work for hook up, integrating, interfacing with system and commissioning with the relocated plant.
- The Consultant shall develop detailed dismantling and tagging procedure of equipment / piping for PCC contractor.
- Design of specifications of all plant bulk material of identical or better specification required for relocation and commissioning of plant, for including but not limited to insulation material, any additional process & utility piping, gaskets (all types), blinds, flanges, fittings, consumables, any additional power/control cables, electrical & instrumentation items, etc. including fabrication, welding, construction, installation, radiographic inspection & hydrostatic testing, etc of piping works.



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*Note: Process equipment, utilities and off sites of KPD-TAY Gas Facility will not be dismantled and shifted. This Plant will remain operative during the dismantling and moving of other plants units. Consultant shall provide details for proper blinding and isolation arrangement of operative plant equipment and piping that is to be left at Kunnar Gas Field.*

**5.6.2 Process Design & Engineering**

Consultant shall confirm process simulations, equipment design summary sheet, reference P&IDs and confirm that the Daru process plant shall meet all the requirements for the production of sales gas, LPG and stabilized condensate as per sales specifications. In case there are gaps or shortcoming in the skids, equipment or system Consultant needs to identify and intimate timely to procure required items within the plant. Any performance issue arising due to failure in identification of these gaps or shortcomings shall result in invoking Clauses relevant to Performance Guarantee as will be expressly mentioned at the time of Contract. OGDCL's decision in light of those clauses will be deemed final and binding to the Consultant.

**Process inlet condition at Daru Gas facility:**

<b>Inlet Temperature:</b>	<b>100 Deg. F</b>
<b>Inlet Pressure:</b>	<b>820 Psig</b>
<b>Inlet Flowrate:</b>	<b>16.6 MMSCFD</b>
<b>HC Dew point:</b>	<b>88 Deg. F</b>

The Consultant's over all Scope of Work for Daru Central Facility includes completion of feed, detailed Engineering Design of Daru Central Facility with relocated equipment from Kunnar LPG Plant and supervision of hired PCC during entire project.

**5.6.2.1 Process Engineering Deliverable**

Based on outcome of feed, consultant shall have carried out Detailed Process design of the system and submit following deliverables as minimum:

- Process Flow Diagrams (PFD), Process Flow Scheme (PFS).
- Piping & Instrumentation Diagrams (Process, Utility, Tie-in, Destruct)
- Process & Operational Control Description
- Process Design Criteria / Basis of Design
- Process Design Calculations
- Operating Philosophy
- Process Control Philosophy
- Process Control Description / Functional Specification
- Plant Operating Instructions



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- Process Data Sheets for main Equipment
- Performance Test Procedure
- Materials of Construction Diagram
- Overall Plant Material Balance
- Heat and Material Balance by Stream
- Fire Fighting system evaluation report
- Detailed design of proposed modification in Fire Water System
- Operating Control & Safeguarding Philosophy
- Line list
- Equipment List of Daru & Kunar LPG Plant
- Utility Consumption Summary
- Tie In List
- Performance Test Procedure
- Product Specifications
- Utility Consumptions
- List of Effluents and Emissions
- Major Equipment Schedule
- Relief, Blowdown and Vent system design
- Isolation Philosophy
- Utilities & Off-sites detailed design
- Process Data Sheets / Specifications – Packages
- Process Data Sheets - Major Equipment
- Process Data Sheets - Minor Equipment
- Process Datasheets - Actuated and Control Valves
- Process Datasheets - Relief Valves
- Process Datasheets – Instrument
- Process Datasheets – Piping
- Process Data Sheets for Instrumentation
- Design Pressure & Temperature Diagram

**5.6.3 Civil Design Works**

**5.6.3.1 General.**

- Contractor shall be responsible for verification of existing and / or re-designing of plant foundations for all the skids / equipment for relocation of KNR-LPG at Daru including design for any additional foundations requirement.
- The Contractor shall verify and / or re-design these foundations in accordance with the design conditions, like soil bearing capacity, wind and seismic loads etc., for KNR-LPG proposed relocation site. Contractor shall be responsible for the verification of skid / equipment sizes, the distance and



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size of anchor bolts etc. and arrangement of any other data which may be required for the adequate design of above referred foundations.

- Contractor shall prepare as-built plant layout drawing of existing KNR-LPG in order to relocate all the skids and equipment at proposed location.
- Contractor shall prepare drawings for earthwork, roads, condensate loading dock, RCC & PCC works, flooring, pavements and fencing work required at proposed location of plant relocation.
- The Consultant shall be responsible for the providing the design and specifications of the final site grading to suit accesses to equipment, paved areas, structures and buildings.
- The Consultant shall provide a foundation plan while considering the utilization of existing foundation as much as possible. All structures and equipment shall be bolted down to foundations

**5.6.3.2 Civil and Structure:**

Consultant's Scope of Works includes, but not limited to, detailed engineering and design for the required civil / structural works for the safe completion and commissioning of the project.

**5.6.3.2.1 Design and Engineering**

- Review the Company provided specifications and documents included in the Contract for any inadequacies, discrepancies, conflicts etc., and with Company approval, update and issue the same for engineering and construction;
- Consultant shall undertake site survey to determine existing facilities at the proposed plot and other areas related to the relocated facilities
- Based on the survey levels, Consultant shall advise for backfill/cut new facility location to match with existing/design levels;
- Consultant shall design and construct all facility inside roads/pavements
- Consultant shall provide schedules for finishes, appropriate to the environment, including other necessary schedules, including fixtures and



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fittings, miscellaneous signs, and bar bending schedules;

- Consultant shall prepare all site layouts, and detail drawings together with material takeoffs (MTOs) for all locations.
- The following activities are envisaged for the design of Infrastructure and Underground Facilities:
  - a. Perform all analysis and detail design for all infrastructure and underground facilities including overburden and traffic loads, roads, road markings, sign boards, road crossings, paving, cable trays/trenches, pipe trenches culverts/sleeves, etc.;
  - b. Prepare all plot plans, general arrangement and detail drawings for all infrastructure and underground facilities including all drainage, manholes, catch pits, sumps, road crossings, trench crossings, traffic signs, road markings, barriers, power line guards, paving, lighting, gates and fencing, cable/pipe trenches, water lines, miscellaneous foundations, underground facilities markers, etc.;
  - c. Separate layouts for infrastructure and underground facilities shall be prepared without duplication of background information. A common background may be prepared which contains road/fence layouts, etc., but the detailed information for roads with levels, crossings, turning radii, etc., shall not be included on drainage drawings or cable trench layouts, etc.;
  - d. Prepare all MTOs;
  - e. Undertake all works necessary to deal with interference from existing services and utilities which may arise within the period of this Contract whether identified herein or otherwise.
- The following activities are envisaged for the drainage system:
  - a. Consultant shall design and install rain water drainage system. These systems shall be designed to avoid flooding of the facilities in the event of rainstorms;



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- b. The scope shall include the design and installation of concrete drainage channels, road crossings, culverts etc.

**5.6.3.2.2 Earthworks**

The consultant shall be responsible to provide the project specification for Earthworks.

**5.6.3.2.3 Concrete Works**

The consultant shall be responsible to provide the project specification for Concrete works.

**5.6.3.2.4 Structural Steel Works**

The consultant shall be responsible to provide the project specification for Structural Steel works.

**5.6.3.2.5 Drainage System**

Consultant shall be responsible for the design of the drainage system/storm water system for the relocated plant.

**5.6.3.2.6 Roads and Paving**

Roads and Paving shall be designed and constructed in accordance with the Civil Design Criteria and the Paving Philosophy provided by the consultant. All remaining surfaces will be graveled, wherever applicable and/or advised by Company

**5.6.3.2.7 Deliverables**

The design and engineering deliverables shall include, but not limited to, the following:

- Civil/Structural/Architectural Specifications;
- Site grading and leveling drawings;
- Specification for Site Preparation Works;
- Specification for Concrete Works;
- Specification for Structural Steel Works;



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- Civil general arrangement drawings;
- Foundation & structural drawings for pipe supports/pipe sleeper/pipe racks/pipe bridges;
- Pipe Support Schedules;
- Foundation & structural drawings for crossovers and operating platforms;
- Drain pits/Manholes/Valve Pit Details;
- Fence & Road Layouts;
- Building area & structural drawings;
- Underground Services layout;
- General arrangement and fabrication drawings for structures;
- Drainage layout and drawings;
- Drawings for infrastructure items like roads, culverts, barriers etc.;
- Structural design calculations for all above mentioned items;
- Bar bending schedules;
- Material take-off;
- Civil/Structural Design Criteria / Basis of Design
- Civil/Structural General Specifications
- Underground Services Report
- Foundation Design Calculations
- Foundation General Arrangement Drawings
- Infrastructure General Arrangement Drawings
- Building Design Calculations
- Building General Arrangement Drawings
- Steel Structures Design Calculations
- Steel Structures General Arrangement Drawings
- Bill of Materials for Civil
- Bill of Materials for Steel Structures
- Preparation of Fabrication / Installation Scope of Works



#### **5.6.4 Piping and Mechanical**

Consultant shall prepare Plot plan and other layouts for Daru Central Facility based on the existing plot plan with the intention of not increasing equipment spacing, piping and cable lengths. Consultant can re-arrange the equipment for decreasing the lengths to optimize the facility layout.

##### **5.6.4.1 Engineering Deliverables**

Consultant shall prepare all drawings, specifications, schedules, lists, calculations etc. required relating to the Scope of Work for Piping and Mechanical. It shall be Consultant's responsibility to modify / update the drawings as per the finalized plot plan of Daru Central Facility.

Consultant is responsible for providing the following deliverables for Company's review and approval, as a minimum:

- Plant Layout Drawings
- Piping design and piping Material specifications / Classifications.
- Piping bulk and special item data sheets.
- Piping Standard Drawings.
- Overall Plot Plans.
- Pipe Routing Studies
- Piping layouts & General arrangement drawings;
- Firewater Piping Layouts;
- Underground piping Layouts;
- Piping Tie-in Lists.
- Stress analysis and design
- Pipe Rack Plan and Elevations, if required.
- Piping Supports Schedule
- Pipe support drawings



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- Isometrics.
- Piping Bulk Material MTO / BOQs
- Piping General Specifications.
- Mechanical Equipment data sheets & Specifications, if required.
- Equipment Setting Plans / Layouts
- Equipment General Specification
- Material Requisitions (Long Lead and main / critical Items).
- Specifications for installation of equipment, piping, insulation and painting etc.
- Bill of Quantities (BOQ) for piping / mechanical works.
- Other documents /drawings as needed by Company related to piping scope of work

All the above mentioned documents will also be submitted in the “as-built” condition on completion of the project.

The review of any or all documents by Company does not relieve the Consultant of his responsibility under this contract and any omission/error noticed at any stage shall be made good by the Consultant within the quoted rates. Company reserves the right to reject or ask for resubmission, if the drawings / documents are not as per Contract documents, project specifications or relevant codes and standards. No extra claims and extension of schedule whatsoever shall be entrained on this account.

**5.6.4.2 Pipe Supports**

Consultant shall endeavor to dismantle the required existing pipe supports from Kunnar site and utilize the same at Daru Central Facility. However, in the event, any modification is required in existing piping supports and/or new pipe supports are required, the same shall be considered covered under the Consultant’s scope of work with no additional cost and schedule impact to the Company. Consultant shall provide a Pipe Support Specification as well as fabrication details in case of



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modification in existing and/or new pipe supports. The details shall contain all the required information for application, design, material and fabrication.

**5.6.4.3 Paint and Insulation**

After the dismantlement, relocation and re-installation of Piping has been completed new insulation and cladding (if any) shall be installed, the consultant shall provide the necessary specification for the installation of insulation to meet the requirements of the P&ID.

Above ground facilities (equipment, piping, structural steel, etc.) will be protected by means of external painting to prevent corrosion and for appearance purposes. For Surface preparation and painting Consultant shall provide a painting specification. The consultant shall provide a dismantling plan base on less damage to the piping surfaces as Company envisages that only touch up painting will be required for all the dismantled piping (except welding joints), structural steel and equipment from Kunnar LPG Plant site.

**5.6.5 Electrical Design:**

The consultant shall endeavor to optimize the electrical layout of the relocated systems while utilizing the dismantled items to their full.

**5.6.5.1 Scope of Work**

The Consultant to review for adequacy of existing electrical drawings and data for plant relocation. Clarifying any inconsistencies and obtaining any additional information by site visits that may be required to complete the plant relocation Project. Development of all new drawings and documents including as-built electrical drawings (where required), single line diagram for dismantling and relocation of electrical equipment, updating hazardous area classification drawings.

The Consultant scope for the Electrical System shall include the engineering, assembly, supply of required material (such as the material which cannot be transferred from Kunnar Site to Daru Central Facility like electrical/instrument/control cables, cable/tubing trays, cable glands, earthing rods, lightning arrestors, lugs, junction boxes, consumables, conduits, SS tags, any



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manufacturing of F&G/lighting poles, etc.), supply of (control cables, earthing/grounding cables, lightning protection systems for structures, storage tanks & control room, installation, testing and commissioning of all required electrical equipment and materials, necessary for the complete and proper operation of the DCF.

The Electrical work shall include dismantling and relocation of following, but shall not necessarily be limited to:

- Switchgears, LV Switchboard/ MCC for the process plant
- Power cables and cable systems including Cable trays and trenches
- Associated electrical infrastructure necessary for the complete and proper operation of the project facilities including equipment required for the integration of Daru Central Facility, complete in all respect.

**5.6.5.2 Deliverables**

Consultant must provide but not be limited to the following Electrical related deliverables

- Electrical Equipment Specifications
- Specification of electrical Panels
- Single Line Diagrams (including protection details)
- Electrical Load List
- Electrical Equipment and Component Data Sheet
- Motor Data sheet
- Wiring Drawings and Terminal Connections
- Load List
- Emergency Power Load Specification
- Power Substation Sizing and Layout
- Cable schedule
- Power Cable Layout



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- Cable Tray Route Layouts
- Updating wiring and interconnection diagrams
- Distribution Board Schedules
- Cable and Cable Drum Schedules
- Material take-off Schedule
- Updating Hazardous Area Classification Drawings
- Updating Power and Control Layout Drawings
- Plant and Buildings Lighting Layouts
- Updating Earthing Layout Drawings
- Supplier Drawings and Test Certificates
- Vendor's Catalogs / Literature's

**5.6.6 Instrumentation Design:**

The consultant shall endeavor to optimize the electrical layout of the relocated systems while utilizing the dismantled items to their full.

**5.6.6.1 Scope of Work**

Updating / development of existing drawings necessary for relocation of plant and updating as-built P&IDs after relocation of the plant.

Interfacing of additional equipment with Daru Plant Control System. Control system shall be design for Daru facility.

Consultant shall be responsible for developing design document and drawings for any modifications and hook up required in relocation and commissioning of integrated plant.

Consultant shall be responsible for preparation of detailed engineering documents and drawings of all instrument system and the preparation of all instrumentation after plant relocation.



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The Consultant scope also shall include the dismantling plan, relocating plan and installation plan for all Instrumentation & Controls including, but not limited to, Transmitters, Gauges, in-line instruments such as Flow Elements, Shut Down and Control Valves, Pressure Regulators, Pressure Safety and Relief valves, Fire & Gas monitoring and protection system, SCADA system, modification/addition in Control system, Control Room and Rack Room Equipment such as Panels, Cabinets, smoke detectors inside building (if any), extension in building lights (normal and battery back-up), etc. existing Critical Control panel modification, Telecommunication (if any), Fiber Optic Cables, Instrument cabling, junction boxes, supply of bulk materials & consumables etc.

**Consultant will update and / or develop following documents.**

- Updating System Architecture Drawings.
- Updating power supply details including distribution line diagrams
- Review and updating I/O List
- Redundancy details
- Updating Cause & Effects
- Updating Logic Diagrams
- Loop Drawings
- Technical Data Sheets of additional components used
- Review and updating Instrument & JB Location Layout
- Instrument Cable Layout
- Review and validate Cable Schedule
- Instrument Master Index
- Review and updating wiring, termination and interfacing details drawings
- Material Take Off
- Vendor's Catalogs / Literature's



**5.6.6.2 Deliverables**

Consultant must provide but not be limited to the following Instrumentation related deliverables. However, the Consultant shall provide/ gather additional data as and when required to increase work quality and consider these as minimum mandatory requirements:

- Instruments specification
- Control System Specification
- ESD System Specification
- F&G System Specification
- Control and Safety Systems Philosophy (inc Packages)
- Instrument Power Supply Diagram and Earthing Philosophy
- Preparation of Installation Scope of Works
- Existing PLC/ESD/F&G IO Summary
- Package Specification and Schematics
- Hazardous Area Equipment Schedule
- Alarm and Trip Schedule
- Cause & Effect Diagram (ESD for FEED)
- Instrument Schedule
- Cable Schedule
- Cable Connection Schedule
- System Block Diagrams
- Logic Diagrams
- Loop Diagrams
- Cable Block diagrams
- Instrument Data sheet
- ESDV and BDV Data sheet
- Relief Valve Schedule



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- Safety Instrumented Functions Schedule
- Flow Instrument Sizing
- Control & Equipment Room Layout Drawings
- Control & Safety System Architecture Drawings
- F&G Mapping Layout
- Instrument Location Drawings
- Field Junction Boxes and Instrument Panel specification
- Instrument Hook Up Drawings
- Cable Routing Drawings
- Bill of Materials / MTO
- Instrument Power and Utility Requirements
- Instrument Index
- Instrument Air Distribution Diagram
- Instrument Junction Boxes and Panels Block Diagrams
- Tagging Guidelines
- 

**5.7 Design and Engineering of Additional Equipment**

Consultant shall perform design, detailed engineering, facility hook-up details, Specifications, Datasheets, Process simulation of major additional process & utilities equipment required at Daru Facility.

**5.8 Phase 1 (Stage 4) Preparation of PCC Tender Documents (ITB)**

Once the FEED and Detailed Engineering documents are finalized and approved by COMPANY, development of ITB / Tender Documents for subsequent PC bidding shall be undertaken.

The tender documents shall be detailed enough in all aspects covering the complete scope of PCC Contractor services, technical specifications, procurement specifications, method statements, PCC execution timelines, PCC Execution plan, Health and safety considerations.



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In case of new requirement of long lead item (Mechanical Warranty, Performance Guarantee and Test Run criteria, Vendor List Criteria, Provisional Acceptance Certificate, Mechanical Completion Certificate, Final Acceptance Certificate, PCC Contract / Terms & Conditions and all the Technical & Financial Bid Evaluation Basis and Clarifications as appropriate for the potential PCC Contractors.) may be performed accordingly as mentioned.

During tendering phase, Consultant in collaboration with Company will respond to queries from the potential PCC Bidders at Pre-Bid / Post-Bid Stage including but not limited to attending the pre-bid meeting & bid clarifications meetings along with participation in site visit(s) as envisaged during the course PROJECT OVER ALL SCHEDULE

The consultant shall submit with this bid an execution timeline outlining the overall project completion starting from Phase-I (Stage 1-Stage 4) to Phase-II including successful commissioning and performance testing of the Plant. The timeline shall include:

- Timeline for completion of Phase-I (Stage 1) preparation project feasibility report subsequent to approval of Phase-I (Stage 1) Study by COMPANY.
- Soil Investigation by third party.
- Timeline for completion of FEED, Detailed Engineering and ITB Preparation for PCC Contractor.
- Timeline for completion of Technical Evaluation and Financial Evaluation of the PCC Bids.
- Timeline for Contract Negotiations, Completion of Contract Preparation & Finalization.
- Timeline for construction, testing and commissioning subsequent to award of PCC Contract.



## **5.9 PHASE-II (BIDDING SERVICES AND PROJECT MANAGEMENT / SUPERVISION)**

### **5.9.1 Technical & Commercial Evaluation of PC Contract Bidders**

- CONSULTANT shall carry out the technical evaluation of all the bids as received from the PC prospective Bidders and will submit detailed technical bid evaluation report to COMPANY.
- CONSULTANT shall carry out the financial evaluation of the technically responsive / qualified bids as received from the PC prospective Bidders and shall submit detailed financial bid evaluation report to COMPANY with recommendations.

### **5.9.2 Contract Preparation & Finalization of Documents**

- After the technical and financial evaluation CONSULTANT shall assist COMPANY in negotiations, award and finalization of PCC contract documents with the successful Bidder. PCC contract document shall be updated / augmented based on the Pre-Bid / Post-Bid Clarifications and outcomes of contract negotiations & meeting(s) with PCC Contractor.

### **5.9.3 Project Management & Construction Supervision / Monitoring, Tracking and Expediting:**

Consultant shall provide all personnel and support necessary for the management of the Works. Management activities shall include overall coordination; contract administration; management of Contractor Group participants including Subcontractors, Vendors, and others for the engineering, procurement, fabrication, construction, installation, pre-commissioning and commissioning activities; and interfacing with Company and other primary interface points for all phases of the Work.

Consultant shall be responsible for supervision during execution of the work to ensure that Contractor, all subcontractors, manufacturers, fabricators and others contributing and undertaking the Work comply in full with their responsibilities, taking and / or implementing corrective action where necessary and as directed by Company to ensure that the Work is performed in a safe, timely and satisfactory manner.



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Consultant Scope of Project Management shall include the followings as a minimum:

- Project Management till Completion of the Project.
- Site Supervision during Construction Phase
- Site Supervision during Pre-Commissioning & Commissioning Phase
- Project Close Out report & all related final Documentation

Following activities will be performed by Consultant through Project management, HR Management, Project scheduling and budget administration, progress management, Material management, safety and maintenance of quality, document control, construction follow-up through Support by relevant project teams as specified in clause 14.0 of TOR/Scope of work;

- Cooperation with PC Contractor and OGDCL management and supervision of construction progress
- Prevention of safety incidents through environment campaign
- Close quality monitoring through integrated construction management system (i-CON) tools
- Security of Client's facility preservation
- complete supervision and management of manpower and equipment
- Project monitoring / tracking and project review meetings with all stakeholders and expediting the project activities.
- Ensure that all the engineering activity, covering each discipline, meets both the quality and time scheduling requirements.
- Ensure that each activity is in compliance with the PCC Contract.
- Supervision of construction activities at site for erection / installation of equipment & piping, civil works, E&I works & mechanical works etc.
- Detailed and accurate Project schedule management
- Preparing and maintaining master project schedule complying with THE COMPANY's requirement along with other relevant Project Management Documents i.e., Resources matrix etc.



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- Managing the changes in design review and making decisions for potential necessary corrections with consultation of COMPANY.
- Managing mitigation and catchup plan in case of change in field engineering.
- Inspection of materials & equipment (Foreign + Local) and verification of material & equipment's accordingly.
- Strict supervision of procurement, warehousing and material preservation by inventory control.
- Review and finalization of overall & Integrated O&M manual with PCC Contractor.
- Consultant to apply engineering techniques that identify and schedule commissioning requirements early, enabling timely detection of possible schedule delays,
- To provide start-up support such as commissioning plan and the related procedures are developed in line with operating needs.
- Review and finalization of Pre-Commissioning, Commissioning, Start-up & Performance test procedures with PCC contractor.
- Supervision during pre-commissioning, commissioning.
- Supervision and witness during test run and performance guarantee period.
- Project management till completion of project and handover to COMPANY by the PCC Contractor.
- Project Management, Planning and control of the whole project from contract award to final acceptance by the company.
- Consultant to submit Daily progress of site activities performed by PCC Contractor.
- Consultant to submit weekly progress report of overall project activities conducted at site.
- Review of Monthly Progress prepared by PCC Contractor and submitted to OGDCL for record.
- Review of Invoices submitted by PCC Contractor.
- Review and finalization of As-built drawings prepared by PCC



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Contractor and submission to COMPANY.

- Witness and signing of performance of PCC.
- Reconciliation of material with PCC Contractor.
- Project close out report.

## **6.0 QA/QC & HSE MANAGEMENT**

- i. Consultant shall have primary responsibility to ensure all the construction is being carried out in accordance with detail design documents, applicable design and QA/ QC codes, standards and industry norms/ standards. The consultant site team will sign all the QA/ QC and construction quality conformance document.
- ii. Consultant shall follow the Company's HSE Policy in letter & spirit. Consultant shall ensure that all the requisite resources are provided during activities for effective implementation of HSE Management System.
- iii. Consultant must comply all HSE requirements under Oil & Gas industry best practices & prevailing local legislations, moreover Consultant must also comply Company's safety HSE guidelines.
- iv. Company has right to inspect / audit on as & when required basis to check the implementation of HSE Management System & may propose measures which will be binding on the Consultant to follow in true letter & spirit.

## **7.0 APPLICABLE CODES & STANDARDS**

Consultant to follow applicable codes and standards (latest applicable EDITION to be referred, copy to be shared with OGDCL as well) for carrying out each stage of work activities throughout the project.

Full compliance to the applicable codes is mandatory as per DATA SHEET, design parameters, and/or purchaser's guidelines/Options mentioned in these codes/standards/documents.

The Consultant shall be responsible for implementation of any regulations concerning the process design, detail design, engineering, procurement, manufacturing and testing of equipment, which are mandatory by Pakistan Law, decree, code or regulations. This shall include compliance with relevant



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Pakistan standards. Consultant shall be responsible for ensuring that the Work also meets Pakistan codes or standards that local permitting may require.

**Table 1: Mechanical**

AFBMA	Anti-Friction Bearing Manufacturer Association
OSHA	Occupational Safety and Health Administration
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AISE	Association of Iron and Steel Engineers
AISI	American Iron & Steel Institute
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
API	American Petroleum Institute
ASHRAE	American Society of Heating, Refrigeration and Air conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
ATC / PTC	Acceptance Test Codes / Performance Test Codes
AWS	American Welding Society
HIS	Hydraulic Institute Standard
ISO	International Organization for Standardization
NACE	National Association of Corrosion Engineers
NFPA	National Fire Protection Association.
SSPC	Society of Protective Coating
TEMA	Tubular Exchanger Manufacturers Association
UL	Underwriters Laboratories
WRC	Welding Research Council
UFC	Uniform Fire Code
HEI	Heat Exchangers Institute
Local Pakistani standards and Regulations (As Applicable)	

**Table 2: Electrical**

NFPA (National Fire Protection Association)	NFPA 30 NFPA 70 NFPA 497	Flammable and Combustible Liquids Code National Electrical Code (Chapter 5) Classification of Flammable Liquids, Gases, or Vapour and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
API (American Petroleum Institute)	API RP 500  API RP 505:	Recommended practice for classification of Locations for Electrical Installations at Petroleum facilities classified as Class I, Division 1 and Division 2  Recommended practice for classification of Locations for Electrical Installations at Petroleum facilities classified as Class I, Zone 0, Zone 1 and Zone
ANSI (American	ANSI C2	National Electrical Safety Code - Section 127 Underwriters Laboratory (UL) standards



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National Standards Institute)		
European Standards	IP-15	Institute of Petroleum : Area classification code for petroleum Installations – part 15
IEC (International Electro technical Commission)	IEC 60079-10-1 IEC 60079-10-2 IEC 60079-14	Classification of Hazardous Areas – Explosive Gas Atmospheres Classification of Areas – Combustible Dust Electrical Installations in Hazardous Areas

**Table 3: Piping**

API (American Petroleum Institute)	API 600 API 602  API 594 API 6D API 6FA API 598	Steel Gate Valves - Flanged and Butt-welding ends Compact Steel Gate Valves – Flanged, Threaded Welding and extended-body ends. Check Valves: Wafer and Wafer-lug, and double flanged type Specification for pipe line valves (Gate, Plug, Ball and Check valves). Specification for fire test for Valves. Valve Inspection and Testing
ASME (American Society of Mechanical Engineers)	ASME BPVC ASME B16.9 ASME B16.11 ASME B16.20 ASME B16.34 ASME B16.5 ASME B31.3 ASME B36.10M ASME B16.19M	ASME Boiler and Pressure Vessel Code, all applicable sections. Wrought Steel Butt-welding Fittings. Steel Socket Weld Fittings. Metallic Gaskets for Pipe Flanges - Ring Joint, Spiral Wound. Valves - Flanged, Threaded and Weld End. Steel Pipe Flanges and Flanged Fittings. Process Piping. Welded and Seamless Wrought Steel Pipe Stainless Steel Pipe
ASTM		American Society of Testing and Materials
AWS		American Welding Society
BS (British Standards)	BS 1868 BS 1873  BS 5351 BS 5352 BS 6755 BS 6755	Steel Check valves (Flanged and Butt-welding ends) Steel Globe and Globe stop and Check valves (Flanged and Butt-welding ends). Steel Ball valves Steel wedge Gate, Globe and Check valves (50 mm and smaller) Testing of valves Part 1: Production pressure testing requirements Testing of valves Part 2: Specification for Fire-type testing requirements
ISO		International Organization for Standardization
NACE (National		NACE MR-01-75, Material Requirement - Sulfide Stress



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Association of Corrosion Engineers		Cracking Resistant Material for Oilfield Equipment.
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**Table 4: Civil**

ASTM (American Society for Testing and Materials)	ASTM D422	Standard Test method for particle size analysis of soil.
	ASTM D1557	Test Method for Laboratory Compaction Characteristics of Soil using modified effort
	ASTM D2167	Standard Test Method for density and unit weight of soil in place by the Rubber Balloon method.
	ASTM D2487	Classification of soils for Engineering purposes
	ASTM D2922	Standard Test methods for density of soils and soil aggregate in place by Nuclear methods
	ASTM D3740	Standard Practice for minimum requirements for agencies engaged in the Testing and for Inspection of soil and rock used in Engineering design and construction.
	ASTM D4318	Standard Test method for Liquid limit, Plastic limit and Plastic index of soils.
	ASTM 4253	Standard Test methods for maximum index density and unit weight of soils using vibratory table
ASTM 4254	Standard Test methods for minimum index density and unit weight of soils and calculation of relative density	
ASTM C33	Standard Specification for Concrete Aggregate	
BS (British Standards)	BS 6031	

**Table 5: Pakistan Standards**

Pakistan Oil & Gas Regulations 1974 Pakistan Electricity Act 1910 Pakistan NEQS Standards Pakistan Standard 1401:1978 and Amendment No. 1, Nov 1985 (LPG Product Specifications) Pakistan Mines Act 1940
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**8.0 AS-BUILT DRAWINGS OF DARU-MANGRIO (PROCESSING) FACILITY & LPG PROJECT**

As well as drawings presented in A3 format in the PROJECT Data Book CONSULTANT shall provide COMPANY with three (3) full size reproducible, together with one (1) full size print of all A1 and A0 drawings raised to the As-Built status. CONSULTANT shall nominate drawings to be ‘As Built’ and submit to COMPANY for review. Soft copies of the As-Built drawings shall be submitted in format



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and software as specified by the COMPANY.

## **9.0 PROJECT CLOSE OUT & REPORT**

Consultant shall be responsible for project close-out documentation and all related documents necessary for close out report, approval / submission of mechanical completion dossiers containing all relevant design & construction data as submitted by the PCC contractor. Essential project close-out reports with lesson learnt shall also be prepared and submitted.

## **10.0 DOCUMENTS TO BE SUBMITTED WITH BID PROPOSAL**

Consultant shall essentially prepare complete list of deliverables and provide 03 sets of hard copies & soft copy) required Phase wise deliverables/ documents mentioned in this TOR/Scope of Work (Section-I), Shall be used for Technical Evaluation examination of the Bidders those who were pre-qualified.

Consultant shall also prepare list of essentially documents and provide required documents (03 sets of hard copies & soft copy) mentioned in Appendix-B-Technical Qualification Basis & Eligibility requirements Shall be used for Pre-Qualification of the Bidders those who were pre-qualified.

COMPANY may ask for any other Project related document as per industrial practice.

**Note:** Moreover consultant to include any missing deliverable in above Work to complete the project milestones in true spirit.

## **11.0 TIMELINE OF CONSULTANT'S SCOPE OF WORK**

The maximum time for the completion of Phase-I of the project from award of contract is 02 months (08 weeks). After the approval of Phase-I (Stage 1) from the company the project will be progressed towards Phase-II which will have a total completion period of 2 Months (08 Weeks) from the notice of progress from the Company. The mentioned time periods indicate all calendar days (this includes all weekends, public holidays and the like) and NOT ONLY WORKING DAYS.

The Consultant shall be required to expedite work to meet execution deadlines and Project targets for ensuring the timely completion of the Project. Necessary technical & supporting staff to be arranged by the Consultant with no cost to the company.

Consultant shall be responsible to plan all activities and manage the progress accordingly, while taking



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into account the restrictions of pandemic/epidemic lockdowns and the like of which may cause delay in the project completion.

### 11.1 TIMELINE OF ACTIVITIES

After award of contract, Consultant will start his study work on OGDCL in-house provided data and follow as defined above to complete the task. The estimated time lines are as follows;

Sr. No.	Description of Activities	Timeline
<b>1.</b>	<b>Phase-I (Assessment/Adequacy of relocated items &amp; completeness of facility)</b>	<b>60 Days</b>
<b>Stage 1</b>		
1.1	Preparation of As-Built, Study assessment/adequacy & suitability of Kunnar LPG Plant and additional requirement of relocated LPG recovery plant at Drau Central Facility).	
1.2	Submission of Final Study Report	
<b>2.</b>	<b>Phase-I Engineering Design</b>	<b>60 Days</b>
<b>Stage 2</b>		
2.1	Soil Investigation and Topographic survey of Flow lines	
2.2	Preparation of Front End Engineering (FEED)	
2.3	HAZOP Study	
<b>Stage 3</b>		
2.4	Detailed Engineering a. Process Engineering b. Civil & Structural Engineering c. Piping / Mechanical Engineering d. Electrical Engineering e. Instrument & Control Systems f. Additional Equipment Design (If Required)	
<b>Stage 4</b>		
2.5	Preparation of Tender Documents (ITB) for PCC	<b>In parallel to Stage II</b>
<b>3</b>	<b>Phase-II Bidding Services and Project Management / Supervision In line with PCC Contractor Award.</b>	<b>180 days</b>
3.1	Technical & Commercial Evaluation	
3.2	Preparation & Finalization of Contract	
3.3	Project Management till Completion of the Project.	
3.4	Site Supervision Construction Phase	
3.5	Site Supervision Pre-Commissioning & Commissioning Phase	
3.6	Project Close Out report , Reconciliation & all related final Documentation	

**Note 1:-** Timeline of 1<sup>st</sup> phase will start from Award of Contract. However, the time line of OGDCL case processing, approvals and Proceedings are not included in above time lines. The Overall tentative timeline for consultancy services is 10 to 12 Months. It may increase / decrease without any increase in consultancy works cost.

**Note 2:-** Above mentioned time-line is based on calendar days.



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**12.0 PROJECT SITE SUPERVISION SCHEDULE (CONSTRUCTION & COMMISSIONING)**

Based on following estimated man days;

Site supervision schedule of dismantling & shifting of Kunnar LPG Plant to Daru Central Facility: -

S. No.	Description	Man –Days Approx.	Man-Day Rate (Rs.)	Total Price (Rs.)
1-	Site Manager			
2-	Civil Engineer			
3-	Civil Inspector / Supervisor			
4-	Mechanical / Piping Engineer			
5-	Mechanical Inspector / QA/ QC			
6-	Electrical Engineer			
7-	Instrument Engineer			
8-	Process / Commissioning Engineer			
	<b>TOTAL</b>			

Site supervision schedule for relocation of Kunnar LPG plant at Daru Central Facilities

S. No.	Description	Man –Days Approx.	Man-Day Rate (Rs.)	Total Price (Rs.)
1-	Site Manager			
2-	Civil Engineer			
3-	Civil Inspector / Supervisor			
4-	Mechanical / Piping Engineer			
5-	Mechanical Inspector / QA/ QC			
6-	Electrical Engineer			
7-	Instrument Engineer			
8-	Process / Commissioning Engineer			
	<b>TOTAL</b>			



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**13.0 BID PRICE SCHEDULE**

The CONSULTANT shall fill in the price as per the following format:

<b>PRICE SCHEDULE</b>		
S. No.	Item	Cost, Pak Rupees (PKR)
<b>PHASE-I (STAGE 1) Preparation of Documents As per Deliverable</b>		
1.	Preparation of As-Built, Study assessment/adequacy & suitability of Kunnar LPG Plant and additional requirement of relocated LPG recovery plant at Drau Central Facility).	
2.	Submission of Final Study Report	
<b>Sub-Total</b>		
<b>Provincial Sales Tax @ _____%</b>		
<b>Total PHASE-I (STAGE 1) Cost with Sales Tax</b>		
<b>PHASE-I (STAGE 2)</b>		
3.	Soil investigation Scope of Third party	
4.	Topography Survey	
5.	Front End Engineering Design (FEED)	
6.	HAZOP Study	
<b>Sub-Total</b>		
<b>Provincial Sales Tax @ _____%</b>		
<b>Total PHASE-I (STAGE 2) Cost with Sales Tax</b>		
<b>PHASE-I (STAGE 3) Preparation of Documents As per Deliverable</b>		
7.	Detailed Engineering For Daru Facility:	
a)	Process Engineering	
b)	Civil & Structural Engineering	
c)	Piping / Mechanical Engineering, Fire fighting	



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<b>PRICE SCHEDULE</b>		
S. No.	Item	Cost, Pak Rupees (PKR)
	d) Electrical Engineering	
	e) Instrument & Control Systems	
	<b>Sub-Total</b>	
	<b>Provincial Sales Tax @ _____%</b>	
	<b>Total PHASE-I (STAGE 3) Cost with Sales Tax</b>	
<b>PHASE-I (STAGE 4)</b>		
8.	Preparation of Tender Documents (ITB) for PCC Contractor	
9.	Technical & Commercial Evaluation	
10.	Preparation & Finalization of Contract	
	<b>Sub-Total</b>	
	<b>Provincial Sales Tax @ _____%</b>	
	<b>Total PHASE-I (STAGE 4) Cost with Sales Tax</b>	
<b>PHASE-II</b>		
11.	Project Management till Completion of the Project.	
12.	Site Supervision Construction Phase	
13.	Site Supervision Pre-Commissioning & Commissioning Phase , Start-up/Testing and Performance test	
14.	Project Close Out report & all related Documentation, Submission of Final As-Built and reconciliation of material.	
	<b>Sub-Total</b>	
	<b>Provincial Sales Tax @ _____%</b>	
	<b>Total (Phase-II) Cost with Sales Tax</b>	
	<b>Grand Total (Phase-I + Phase-II ) without Sales Tax</b>	
	<b>Grand Total (Phase-I + Phase-II ) with Sales Tax</b>	



#### **14.0 PAYMENT TERMS:**

##### **14.1 Payment terms for Phase-I (Stage 1) will be as under:**

- Payment of (Sr. No. 1) will be made upon completion, submission and acceptance of final documents
- Payment of (Sr. No. 2) will be made after completion and submission of final Documents and study report.

##### **14.2 Payment terms for Phase-I (Stage 2) will be as under:**

- Payment of Sr. No. 3 shall be made upon full completion Soil Investigation Scope of Third party and submission of actual invoice by third party.
- Payment of Sr. No. 4 shall be made upon full completion Topography Survey Scope of Third party and submission of actual invoice by third party.
- Payment of Sr. No. 5 shall be made upon submission of Final Front End Engineering Design (FEED) Package.
- Payment of Sr. No. 6 shall be made upon conducting and submission of HAZOP Study report.

##### **14.3 Payment terms for Phase-I (Stage 3) will be as under:**

- Payment of Sr. No. 7 shall be made upon submission of final Detailed Engineering design packages.

##### **14.4 Payment terms for Phase-I (Stage 4) will be as under:**

- Payment of Sr. No.8 Preparation of Tender Documents and submission of complete final PCC Contractor ITB for hiring of PC Contractor.
- Payment of Sr. Nos. 9-10 shall be made upon carrying out Technical & Financial Evaluation and Preparation & Finalization of Contract, & contract negotiation.

##### **14.5 Payment terms for Phase-II will be as under:**

- Payment of Item 11-13 shall be made on monthly basis as per actual manpower deployment verified by OGDCL Project site coordinator.
- Payment of Sr. No. 14 shall be made 10% of total amount of Phase-II upon submission of Project close out report & all related final Documentation Project, Submission of Final As-Built and reconciliation of material.

##### **14.6 General:**



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- The quote should be in Pak Rupees and all payment shall be made in Pak Rupees after deduction of all applicable taxes at prevailing rates. The invoice to be accompanied with Annexure-C duly issued by FBR.

**Notes:**

1. Cost of Sr. Nos. 11-13 shall be supported by a sheet having details of Man-days & Man-days rates of various engineering disciplines. Supporting documents such as attendance sheet shall be submitted with invoice for payment of Sr. Nos. 11-13. The payment will be made on monthly basis as per actual man-days. However, the payment shall not exceed the quoted charges for the period's specific in Sr. Nos. 11-13.
2. In case any additional time is required for completion of project, COMPANY may consider to extend the supervision period on same man-day rates.
3. Payment will be made at actual and against verified invoices for items Sr. Nos. 11-13 .
4. The CONSULTANT may submit a Work Breakdown Structure (WBS) for Phase-II activities to facilitate progressive invoicing.



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**15.0 APPENDIXES**

- 15.1 Appendix-A (TOR/Scope of Work)
- 15.2 Appendix-B (Technical Qualification Basis, Eligibility Criteria & Evaluation Criteria)
- 15.3 Appendix-C (Document Submission Checklist)

**16.0 ANNEXURES:**

<b>ANNEXURES -I</b>	PROFORMA FOR SITE VISIT
<b>ANNEXURES -II</b>	PROJECT EXECUTED
<b>ANNEXURES-III</b>	BID BOND
<b>ANNEXURES- IV</b>	FORM OF CONTRACT
<b>ANNEXURES -V</b>	PERFORMANCE BOND FORM

**17.0 ATTACHMENTS**

**17.1 KUNNAR LPG PLANT AVAILABLE DATA**

<b>KUNNAR LPG PLANT</b>	
<b>LIST OF Attachments</b>	
<b>Attachments No.</b>	<b>Description of Documents</b>
1	Equipment Data of Kunnar LPG plant
2	Kunnar LPG Process Study Report (June 1998)
3	P&ID 's of Kunnar LPG plant
4	Non-Intrusive Inspection Reports of Kunnar LPG plant
5	As built piping layout detail for LPG bullet Zone-A
6	As built piping layout detail for Zone-B
7	As built piping layout detail for Zone-C
8	As built piping layout detail for well head gathering area Zone-D
9	Main Piping As built Plan
10	21405-MPL-01 LPG Bullets
11	21404-FWL-02 Fire Network



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**17.2 DARU-MANGRIO CENTRAL FACILITY DATA**

<b>DARU-MANGRIO CENTRAL FACILITY</b>	
<b>LIST OFF ATTACHMENTS</b>	
<b>Attachment No.</b>	<b>Description of Documents</b>
<b>1</b>	Process Description Report Of Daru Central Facility
<b>2</b>	Daru Facility-P&ID's-Piping Layout and Plot Plan
<b>3</b>	As Built of Daru well head Facilities.
<b>4</b>	Separators Data at Daru field.
<b>5</b>	Compressor Manual at Daru Facility
<b>6</b>	Gas analysis (Chhutto-1,Daru-1,Mangrio-1)
<b>7</b>	Wells Testing result
<b>8</b>	Joint Production Profile
<b>9</b>	Reserves Forecast



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# **ANNEXURE -I**



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**ANNEXURE-I**

PROFORMA FOR SITE VISIT

**Oil & Gas Development Company Limited**  
**Islamabad**  
**(Pakistan)**

Dear Sir's

Tender Enquiry No. PROC-FC/CB/PROJ/\_\_\_\_\_

We request permission to visit Kunnar LPG Plant and Daru Central Facilities  
on \_\_\_\_\_

We accept that visit will be coordinated by OGDCL but the arrangements and travel  
cost for the visit will be to our account.

The representative (s) nominated for visit are:

	Full Name	Nationality
1.		
2.		
3.		
4.		

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Company: \_\_\_\_\_

*Enclosures: Copy of valid CNIC/Service Card*



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# **ANNEXURE -II**





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# **ANNEXURES-III**





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**Oil & Gas Development Company Limited List of Banks allowed for Bank Guarantees**

<b>Sr. No.</b>	<b>Bank Name</b>
1	ALLIED BANK
2	ASKARI BANK
3	BANK AL HABIB
4	BANK ALFALAH LTD
5	FAYSAL BANK
6	HABIB BANK LTD
7	HABIB METROPOLITAN BANK
8	MEEZAN BANK LIMITED
9	MCB BANK
10	NATIONAL BANK OF PAKISTAN
11	STANDARD CHARTERED BANK
12	UNITED BANK LTD



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# **ANNEXURE- IV**



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**ANNEXURE – IV**

**FORM OF TENDER OR BIDDING FORM**

Dated: \_\_\_\_\_

Tender Enquiry No. PROC-FC/CB/PROJ/UCH(COM)-4462/2019

To

Oil & Gas Development Company Limited  
Blue Area, Islamabad  
Pakistan

Gentlemen,

1. Having examined the Scope of Work and Instructions to bidders of Invitation to Bids, the receipt of which is hereby acknowledge, we, the undersigned, offer to supply the services (Nature of Services) to OGDCL in conformity with the Scope of Work and Instructions to bidders at the rates mentioned in our Bid Proposal or other such sums as may be ascertained in accordance with the said conditions.
2. We confirm that the terms and Conditions given in Tender Enquiry are acceptable to us and if our Bid is accepted we shall execute a contract with OGDCL accordingly without any exceptions, we further confirm to commence service within .....  
days of the mobilization notice issued by OGDCL.
3. We agree to validate bid unconditionally for the period of 180 days from the date of opening the same and it shall remain binding upon us and may be accepted thereof, shall constitute a binding contract between us.
4. Until a formal Agreement is prepared and executed, this bid together with your acceptance thereof shall constitute a binding contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.
6. Our bid proposal do not contain any deviation or exceptions from the terms & conditions enunciated in the tender documents.



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Dated this \_\_\_\_\_ days of \_\_\_\_\_, 2019

Name & Signature \_\_\_\_\_ in the capacity of  
\_\_\_\_\_ duly authorized to sign tender for and on behalf of:

\_\_\_\_\_

**(NAME OF THE FIRM IN BLOCK CAPITALS)**

Complete Address: \_\_\_\_\_

\_\_\_\_\_

Telephone No. \_\_\_\_\_

Fax No. \_\_\_\_\_

Phone No. \_\_\_\_\_

Signature: \_\_\_\_\_

Witness:

1. \_\_\_\_\_  
(Signature) (Name)

2. \_\_\_\_\_ (Signature)



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# **ANNEXURE –V**



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**ANNEXURE – V**

**PERFORMANCE BOND FORM**

Oil & Gas Development Company Limited  
OGDCL House, Jinnah Avenue, Blue Area,  
**Islamabad (Pakistan)**

Guarantee No.....  
Date of issue.....  
Date of expiry.....  
Amount.....

Ref; Our Bank Guarantee No. \_\_\_\_\_ in the sum of \_\_\_\_\_  
Account \_\_\_\_\_ Amount of Contract/Job \_\_\_\_\_

In consideration of you having entered into contract  
No. \_\_\_\_\_ dated \_\_\_\_\_ with \_\_\_\_\_ called Contractor and in  
consideration of value received from CONTRACTOR, we hereby agree and undertake as follows;

- 1) To make unconditional, immediate and forthwith payment to you as called upon of an amount (equivalent to 10% of total contract value in US\$ or Pak Rupees) on your written FIRST and SIMPLE demand without further recourse, question, query, deferment, contestation or reference to CONTRACTOR or any other person in the event of default, non-performance or non-fulfillment by CONTRACTOR of his obligations liabilities, responsibilities under the said Contract of which you shall be the sole and absolute judge.
- 2) To accept written intimation from you as conclusive, sufficient and final evidence of the existence of a default or breach as aforesaid in the part of CONTRACTOR and to make payment immediately and forthwith upon receipt of your FIRST and SIMPLE written intimation.
- 3) To keep this Guarantee in full force from the date hereof until \_\_\_\_\_ from the date of issuance or released by authorized person.
- 4) That no grant of time or other indulgence to, amendment in the terms of the contract by Agreement between the parties, or imposition of Agreement with contractor in respect of the performance of his obligation under and in pursuance of the said Agreement with or without notice to us, shall in any manner discharge of otherwise however affect this Guarantee and our liabilities and commitments there under.
- 5) This is an **independent** and **direct** obligation guarantee and shall be binding on us and our successor in-interest and shall be irrevocable.
- 6) This Guarantee shall not be affected by any change in the constitution of the Guarantor Bank or the constitution of the Contractor.
- 7) This Guarantor Bank warrants and represents that is fully authorized, empowered and competent to issue this guarantee.

Authorized Sign for Issuing Bank

**Seal of the Bank**



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<b>Sr. No.</b>	<b>Bank Name</b>
1	ALLIED BANK
2	ASKARI BANK
3	BANK AL HABIB
4	BANK ALFALAH LTD
5	FAYSAL BANK
6	HABIB BANK LTD
7	HABIB METROPOLITAN BANK
8	MEEZAN BANK LIMITED
9	MCB BANK
10	NATIONAL BANK OF PAKISTAN
11	STANDARD CHARTERED BANK
12	UNITED BANK LTD