



BHARAT PETROLEUM CORPORATION LIMITED

(A Govt. of India Enterprise)

**TENDER FOR PROJECT MANAGEMENT CONSULTANCY SERVICES (EPCM)
FOR PROPOSED
IRUGUR (COIMBATORE) DEVANGONTHI (BANGALORE) MULTI PRODUCT
PIPELINE OF BPCL**

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INVITATION FOR BIDS

1.0 INTRODUCTION & PROJECT STATUS:

To meet the growing demand of Petroleum products in state of Karnataka, M/s BPCL envisages laying of 16" size, approx. 355 KM long, API 5L grade cross-country pipeline for the movement of MS/SKO/HSD/ATF mainly along ROW of NH/SH/ODR in Tamil Nadu and some part in private ROU from Irugur (Coimbatore) Dispatch Terminal to existing Terminal at Devangonithi (Bangalore), with intermediate Tap off point at Sankari Depot and Intermediate pigging station with provision for future pumping station.

In order to proceed further on the proposal, BPCL invites bids through e-tendering on domestic Competitive Bidding basis for "Engineering, Procurement & Construction Management services (EPCM) for BPCL's proposed Multi product pipeline from Irugur (Coimbatore) to Devangonithi (Bangalore)" under single stage two bid system from competent agencies meeting the Bidder Qualification Criteria as detailed herein. Bids submitted online through BPCL's e-tender al shall only be considered for processing.

Project Status:

- Detailed engineering survey of the entire pipeline route completed.
- Cadastral Survey completed. Land statement for section 3(I) published for Karnataka is completed for Tamil Nadu it is balance.
- Identification of road authorities completed and application for NOC submission is in progress
- PNGRB authorization received.

2.0 IMPORTANT DATES OF THE TENDER:

The complete Bidding Document is available on BPCL E-procurement website: <https://bpclproc.in/>. Bidders can view/ download the document from the above website. All amendments, time extension, clarifications etc. will be uploaded in the websites only and will not be published in Newspapers. Bidders should regularly visit the above website to keep themselves updated.

3.0 BRIEF SCOPE OF WORK:

The main scope of work envisaged for EPCM tender is carrying out Basic Engineering, Detailed Engineering & finalization of the same, Detailed and residual engineering till commissioning, Procurement of goods and services, Inspection & expediting, Construction Supervision (from Office/ Site), Project Monitoring, Project Management, Pre commissioning checks, Commissioning assistance, Post commissioning support such as Site acceptance test of different systems, PCP surveys, Handing over of facilities along with final documentation, Contract/PO closures, Submission of Project closure, Arbitration (if any).

The scope of work is divided as office works (Part-A), Detail Engg (Part-B) and Site works Part-C as detailed in completion period clause no. 4.

The facilities comprises of Cross country pipeline system, Pipeline dispatch station with mainline pumps & allied facilities at Irugur (Coimbatore), Tap off point (TOP cum IP station) at Sankari, Intermediate pigging stations at approx. which can be converted to future pumping station, Receipt manifold & allied facilities at Bangalore (Devangonathi) including SV/ CP stations, Control room building / Substation, civil works, Mechanical works, CP system, Electrical & Instrumentation system, Telecom & SCADA, PCMS, integration of CCKPL systems etc. and all associated system for pipeline etc.

3.1 Set forth is a brief summary of the scope of work of EPCM and entire job is divided in two parts:

Pipeline scope start from taking connection from Tanks at dispatch terminal to connecting it to Tanks at Receipt terminal and Tap off stations.

3.1.1 Office work (Part – A & Part B): It is comprised of basic, detailed, residual engineering, procurement services including Material Inspection services (Foreign & Indigenous Inspection), project monitoring etc. as detailed below:

- A. Visit to the existing stations, collection of data and carry out adequacy checks of existing systems.
- B. Carrying out and finalization of Basic engineering & detailed engineering that includes Process design Package, all Engineering Design basis (Pipeline, Mechanical, Civil, Electrical, Instrumentation etc.), P&IDs, HAZOP & HAZID study, Pipeline optimization study, surge analysis etc. and acceptance from owner for going ahead with detailed engineering considering pipeline length, TOP cum IP station at Sankari, 1nos. pigging station en-route , Receipt terminal at Devangonathi (Bangalore), en-route SV stations with latest applicable standards/ guidelines.
- C. Study of existing CCKPL SCADA , Telecom System and implementation of integrated system viz. SCADA, APPS, Telecom System and other system etc. considering overall pipeline operational requirement.
- D. Review of Detailed Route Survey/Alignment sheets/Cadastral Survey/Soil investigation/ Soil Resistivity/
- E. Carry out Geotechnical Survey of Water bodies for detailed engineering purpose.
- F. Carry out all activity for data collection for detailed engineering purpose.
- G. Review of EIA/RRA report prepared by owner’s agency and incorporation of the recommendations for detailed engineering.
- H. Finalization of project execution methodology and approval from owner.
- I. Review and Adoption of BPCL purchase procedure for procurement of Goods, services and works contract
- J. Detailed engineering including residual engineering till commissioning.
- K. Finalization of Material Take off (MTO), Material Requisition (MR) of various items & Preparation of tender document for procurement of Goods, services and works

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contracts.

- L. Preparation of item wise cost estimate for each Material Requisition for goods and Works contract Tender document by using latest estimation technique along with its basis and sent to owner along with RFQ. PMC to ensure accuracy of cost estimate with its basis.
- M. Preparation of overall primary project cost estimate within one month after start of the PMC job and detailed project cost estimate at a later stage.
- N. Invite bids for procurement of Goods, services and works contract, evaluation of unpriced and priced Bids, Recommendation of award of purchase/ works contracts and providing assistance during negotiations.
- O. Preparation of Letters of Acceptance LOA/DLOA, Contract Documents and Purchase Requisition (PR), Purchase Order.
- P. Review/ approval of design/drawings/documents submitted by Suppliers/ contractors.
- Q. Quality assurance & Quality control as per specified Standards/Procedures for procurement & work contracts.
- R. Inspection and expediting of materials (Foreign and Indigenous) at vendor's works and sites including FAT & SAT.
- S. Providing AS-BUILT drawings against AFC issued & compilation/submission of as built drawings of all vendors including submission of final documents of all packages submitted by all vendors.
- T. Post commissioning assistance during stabilization period.
- U. Overall project Monitoring and management (Office & Site works) and expediting the project progress including risk management
- V. Assistance in Arbitration/ Court Cases with the vendor/ contractors (if any).
- W. All support to owner for making reply to queries including required documents sought by various statutory bodies, Government body, Government Auditors, CTE, CVC etc.

Critical package – PMC to note that linepipe is most critical package and tender for the same shall be floated within **3 months** from the award of the PMC job.

3.1.2 Site works (Part – C): This includes mobilization of site manpower, setting up office as required, approval of QAP, carry out construction, ensure progress as per schedule plan etc. as details below:

- A. Deputation of sufficient manpower, resources at site during stages of construction as per requirement to meet the overall project objective, this includes establishment of PMC offices viz. Site office inside each plant, Camp Offices at Irugur, Sankari, Dharmapui & Devangonhi, RCM office at Coimbatore, making all office arrangement to run office including transport arrangement as required etc.
- B. Execution/ Construction Supervision (Office/ Site) including measurement and certification of contractors bills.
- C. Monitoring of resources, equipment's, bought out materials etc. of the vendor, timely intervention and ensuring timely placement of the same at site.
- D. Quality assurance & Quality control as per specified Standards/Procedures during execution of work at site.
- E. Store management which shall include activities like receipt, storage, issue and

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- reconciliation of free issue material at the end of the Project
- F. Executing site works as per Health, Safety & Environment Management plan
 - G. Mechanical completion, Pre commissioning checks, preparation, and approval of documents as per OISD/ PESO/ PNGRB requirement, compliance to OISD/ CEA check list, preparation of commissioning procedure/ plan and providing commissioning assistance etc.
 - H. Providing post commissioning support such as Site acceptance test of different systems, PCP surveys, resolving punch points observed during SAT/ PCP surveys, Handing over of facilities along with final documentation, Contract/ PO closures, Submission of Project closure report, Arbitration support/Court cases with Vendor/Contractors (if any).
 - I. Providing AS-BUILT drawings against AFC issued & compilation/submission of as built drawings of all vendors including submission of final documents of all packages submitted by all vendors.
 - J. Overall project Monitoring and management (Site works) including Project risk management.
 - K. Carry out job at existing stations of CCKPL pipeline for integration of the various systems finalized during detailed engineering

The above is indicative list of jobs (for office works & site works) to be performed by EPCM. Any other works for the total completion & commissioning of the Multi Product Petroleum pipeline system and to comply with the requirements of the statutory authorities/OISD/PNGRB and other agencies/ Codal requirements which are relevant for the project, forms the scope of work of this tender.

For detailed scope of work, kindly refer “clause no. 5 Scope of work” under Details of work Chapter of this tender

4.0 TIME SCHEDULE:

- 4.1.1 The Completion schedule for Irugur (Coimbatore) Devangonathi (Bangalore) pipeline is as follows:

DESCRIPTION	COMPLETION PERIOD
Part-A (office works) Basic Engineering (consisting of Process Design Basis, Process design Package, all Engg. Design basis (Piping, Mechanical, Civil, Electrical, Instrumentation etc.) P&IDs, HAZOP, HAZID, Pipeline optimization study, surge analysis etc. and acceptance from owner).	11 months from date of LOA of Part-A or from date of intimation of start of work by Engg In-Charge whichever is later.

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<p>Part B Detailed engineering, finalization of MR and tender package, floating of tender, evaluation, award and issue of LOA, Placement of PO/ DLOA. Residual engineering, Inspection & expediting (directly/ indirectly procured material) after award of the job till commissioning and all services required from PMC HQ during / post project completion.</p>	
<p>Part-C (Site works) Construction Management Part C is comprised of four cadre wise manmonth rate of staff to be deployed as plan. Scope of works for Part C involves, overall Project monitoring till commissioning, construction supervision, mechanical completion, commissioning assistance, post commissioning Stabilization and closure of project.</p>	<p>Mechanical Completion: 18 months from LOA of Part C or from date of intimation of start of work by Engg In-Charge whichever is later.</p> <p>Commissioning: 3 months from mechanical completion .</p>

Note : Total project completion period is 32 months.

Order Shall be placed as per following :

- i. Order for Part A&B combined shall be placed at first instance.
- ii. Order for Part-C will be issued separately at later stage within 12 months from date of LOA of Part A&B.

5.0 VALIDITY OF BIDS:

5.1 Validity of bid shall be six (6) months for Part-A & B .

5.2 Validity of bid for placement of order for Part C shall be for a period of 12 month from LOA of Part-A & B. Any further extension beyond 12month if required, same shall be done based on the mutual agreement.

6.0 GENERAL:

6.1 BPCL reserves the right to carry out capacity & capability assessment of the bidder using in-house information and past performance.

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- 6.2** BPCL will not be responsible or liable for cost incurred in preparation, submission & delivery of bids, regardless of the conduct or outcome of the bidding process.
- 6.3** In case any Bidder is found to be involved in cartel formation, their Bid will not be considered for evaluation/ placement of order. Such Bidder will also be debarred from bidding in future including forfeiting the EMD.
- 6.4** Canvassing in any form by the Bidder or by any other agency on their behalf may lead to disqualification of their Bid.
- 6.5** Unsolicited clarifications to the offer and/ or change in the prices during the validity period would render the bid liable for rejection
- 6.6** BPCL reserves the right to reject any or all the bids received or annul the bidding process at any time.
- 6.7** BPCL shall also follow the Public Procurement Policy on Procurement of Goods and services from Micro and Small Enterprises (MSEs) Order 2012.

AFFIDAVIT

AFFIDAVIT OF..... S/o / D/o resident
of EMPLOYED AS.....OFFICE
AT.....PIN.....

I, the above named deponent do hereby solemnly affirm and state as under:

That I am the authorized representative and signatory of M/s.....That the document(s) submitted as mentioned hereunder by M/s.....along with the Bid Document submitted under covering letter no.dated.....towards Tender No.for. (Project) has/ have been submitted under my knowledge.

Sr.	Document Reference No. & Date	Document Subject	Issuing Authority

That the document(s) submitted as mentioned above, by M/s along with the Bid Document for meeting the Bid Qualification Criteria, there under, vide covering letter no. Dated towards Tender No. for.....are authentic, genuine, copy of their originals and have been issued by the issuing authority mentioned above and no part of the document(s) is false, forged or fabricated.

That no part of this affidavit is false and that this affidavit and the above declaration in respect of genuineness of the documents has been made having full knowledge of (i) the provisions of the Indian Penal Code in respect of offences including, but not limited to those pertaining to criminal breach of trust, cheating and fraud and (ii) provisions of bidding conditions which entitle BPCL to initiate action in the event of such declaration turning out to be a misrepresentation or false representation.

I depose accordingly.

DEPONENT VERIFICATION

I,.....the deponent above named do hereby verify that the factual contents of this affidavit are true and correct. No part of it is false and nothing material has been concealed there from. Verified aton this day of 20...

DEPONENT:

DETAILS OF WORK

CONTENTS

1. Project Proposal
2. Project Scope with Facilities
3. Project Status
4. Project Implementation Strategy
5. PMC's Scope of Work
6. Obligations of Owner

1.0 PROJECT PROPOSAL:

1.1 Brief of pipeline:

The project envisages provision of Laying of Approx. 355 KMs long, API5L Grade, 16" (tentative) Diameter Multiproduct Cross Country Pipeline (MS/HSD/SKO/ATF) mainly along ROW of NH/SH/ODR in Tamil Nadu, Existing ROU of CCKPL pipeline, some part private ROU connecting Irugur (Coimbatore) Dispatch Terminal of BPCL to existing terminal at Devangonithi (Bangalore) with Intermediate Sectionalizing Valve stations, Receipt cum TOP at Sankari , intermediate pigging stations (future pumping station), Receipt station at Devangonithi (Bangalore) as per OISD / PNGRB Regulation T4S/ ASME 31.4 & other codal / mandatory statutory requirements.

1.2 Brief summary of the scope of work of EPCM and entire job is divided in two parts:

1.2.1 Office work:

Detailed Engineering and residual engineering up to Project completion & Commissioning, Procurement Services, Project Management, Material Management, Expediting, Mechanical completion, Commissioning & handing over, Post Commissioning Stabilization support & Arbitration Support (if any) etc.

Job also includes carrying out & finalization of Basic Engineering/ Detailed Engineering documents/HAZOP/SIL/Surge Re/P&IDs as applicable considering, TOP at Sankari, SV and IP stations latest revised standards/ guidelines and acceptance by owner.

(Refer "Detailed Scope of Work in clause 5 of Details of Work under this Tender")

1.2.2 Site work:

Site Construction supervision, Expediting, Material Store Management, Mechanical completion, Commissioning & handing over, Post Commissioning Stabilization support & Arbitration Support (if any) etc.

(Refer "Detailed Scope of Work in clause 5 of Details of Work under this Tender")

2.0 PROJECT SCOPE WITH FACILITIES:

The job described below (as minimum) to be covered for completion of the overall Pipeline system i.e. Connection from tanks of DT and connecting to tanks of RT / TOP, Main Cross country Pipeline, Dispatch/ Pumping station, Intermediate pigging stations, Tap off cum receipt point, SV Stations, Receipt station and allied facilities for Multiproduct POL pipeline from Irugur (Coimbatore) to Bangalore (Devangonithi).

- (I) Finalize the location of SV stations/ intermediate pigging stations as per codal requirement/ pipeline hydraulics for arranging the land by BPCL.
- (II) Finalize the optimum requirement of plot size to put up the SV & IP stations facilities (with provisions for conversion to pumping station in future) & finalization of Layout of facilities as per codal requirements.
- (III) Pipeline laying in existing CCKPL ROU near existing running pipeline, along ROW NH

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/ SH / ODR etc. including HDD works construction of SV Stations & IP Stations, TOP, Composite Civil, Mechanical, Electrical & Instrumentation works for pipeline and associated facilities.

- (IV) Construction of Control room, Pump house, Piping Area, Electrical sub stations, OWS with process drains, Road/drain & Culverts etc. as per the site requirement.
- (V) Providing VFD driven main line pumps (working + standby) of suitable capacity at dispatch Station.
- (VI) Fire Fighting facilities at all the stations as per relevant OISD standards/ PNGRB T4S etc. requirements. Provision of all utilities like Service water etc. as per requirement. Hook up of pipeline Fire Fighting system with existing firefighting system of Irugur (Coimbatore) Dispatch Terminal, TOP Sankari, Intermediate pigging station (Future PS) & receipt terminal at Bangalore (Devangonithi).
- (VII) Providing Fire Alarms Panels & Heat/Smoke/Flame detectors system as per process requirements.
- (VIII) Station Piping including impulse piping for instrumentation, Density meter, Basket filters, Flow meter, Control valve etc. shall be provided as per process requirement.
- (IX) HV Panels, MV Panels, UPS, Battery charger, DG sets, Transformer, Capacitor bank, Solar Power plants, DC systems etc. of suitable ratings shall be provided for power requirements of system.
- (X) Providing TCP during construction period and Impressed Cathodic Current Protection system for Pipeline after mechanical completion.
- (XI) Providing OFC based Telecom system along with VCS, CCTV, and Voice & Data communication.
- (XII) Providing latest Integrated SCADA system along with Leak Detection systems (APPS and NPW) . Suitable alternatives of Leak detection system (like PCMS) will also be considered in addition of this.
- (XIII) Providing PCMS/PIDS system.
- (XIV) DCS/ PLC based/ hardwired Instrumentation control, monitoring system for safe and smooth operation of the pipeline and pumping stations.
- (XV) Integration of pipeline with existing storage facility at dispatch, TOP, receipt location and signal exchange with storage Installations e.g. Irugur (Coimbatore), Sankari & Bangalore (Devangonithi).
- (XVI) The above job is indicative only, PMC is required to undertake all works required for completion & commissioning of the Pipeline without any extra cost to BPCL.

Overall Pipeline system facilities comprises of Main Cross country Pipeline, Connecting Pipeline from / to the Tanks at DT/RT/TOP, Dispatch/Pumping station, Intermediate pigging stations, Tap off point, SV Stations, Receipt station and allied facilities as mentioned under:

2.1 MAINLINE:

The Cross country pipeline will be of 16" size, approx. 355 KM length. The tentative details are as under:

- Starting point : Irugur (Coimbatore), Tamil Nadu (Tanks Outlet)
- Termination Point : Bangalore (Devangonithi), Karnataka (Tanks Inlet)

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- Tap off Point : Sankari Depot, Tamil Nadu (Tanks Inlet)
- Intermediate Pigging station : 2 nos (Sankari at ch. 138 km , Ch.228 Approx.)
- Names of states : Tamil Nadu (340 Km), Karnataka (15 Km)
- Existing ROU : 72 Km
- Along NH/SH/ODR : 210 Km

The pipeline shall be designed and constructed in accordance with ASME B31.4, OISD 141, PNGRB Technical Standards T4S etc., and International Safety Codes & Petroleum Act.

Requirements of API Codes 1105, 1104, 1102 etc. shall also be met for the construction and laying of the pipeline.

Pipeline conforming to API 5L (Suitable Grade & Thickness as per codal requirement) PSL-2 with adequate wall thickness shall be selected. Pipeline thickness will be increased at road/ rail/ river crossings as per the standards & guidelines of statutory authorities.

The pipeline will be buried at a depth of min of 1.2 meter except at critical areas like river/ rail crossings etc. where the depth will be more depending upon the design factors and statutory requirements in line with PNGRB/OISD regulations

Pipeline can be laid through HDD in Ghat sections to minimize length / to avoid damage to flora and fauna and it can be laid to avoid heavy dwelling area

Pipeline will be laid in existing CCKPL pipeline for around 70 Km, Along NH/SH/ODR etc / along expanding highway project and private ROU.

Existing ROU / Right of User/Right of Way / Crossing Permissions (To be arranged by Owner)

Pipeline Route shall be acquired by BPCL as per the Petroleum and Minerals Pipeline Act, 1962 and rules laid down under the act. The ROU shall be acquired of width of 18 meter which is suitable for laying the Pipeline and movement of Heavy Equipment's/ Pipe Layers and Inspection Vehicles. Some areas majorly in forest the ROU width shall be 10 m in view of statutory norms and environment considerations.

The en-route crossing e.g. Railways, Road, Canal, River etc. shall be done with prior permission of Authority as per their laid down norms & OISD for safety and security of pipeline.

The pipeline laying along the ROW of NH/SH/ODR or other authority shall be done with prior permission of Authority as per their laid down norms & OISD for safety and security of pipeline.

16" diameter is derived based preliminary calculations, in case during basis engineering if diameter changes (increase / decrease) then same shall be adopted for this project by PMC without any affecting to tender scope of work and tender conditions.

2.2 DISPATCH TERMINAL AT IRUGUR (COIMBATORE)

Product pumping shall be done either from tanks at Irugur (Coimbatore) terminal or heart cut pumping from CCKPL. A hook up at suitable location near the tanks shall be taken from Irugur (Coimbatore) dispatch terminal tank(s)/ discharge header for dedicated pumping and hook up at suitable location on CCKPL Receipt terminal for Heartcut pumping. In this regard, The PMC will study all alternatives in consultation with owner and design, engineer the facilities from hook up point to pipeline dispatch manifold further pumping/ metering manifold for pumping into the cross country pipeline.

- ◆ The facilities are designed such that dedicated pumping from tanks / heart cut based on the operational requirement.
- ◆ Construction of facilities such as Pump House, Piping Area, Piping inside plant from tanks nozzle to pipeline area, Extension of existing Control room/New Control Room (As per requirement), New Electrical substation, Motorable Roads, Drains (Process & Plant Area), Pathways, Oil water separator & connecting with existing drains etc. as per process and codal requirement.
- ◆ Assessing the requirement of fire protection system and other safety measures as per OISD and providing Fire water hydrants & Monitors, HV/MV spray system, fire alarm panels, Hydrocarbon detectors, flame detectors etc.
- ◆ Integration of new firefighting system, fire alarm system at Irugur (Coimbatore) Terminal with firefighting network of Irugur (Coimbatore) Devangonathi pipeline and fire alarm system respectively.
- ◆ Supply of Power (33 KV/11 KV / 433V) from external Grid source or other alternative non-conventional power source. PMC to study the viability of the same by visiting the site and design/engineer the system for taking up the power from external Grid power to the New electrical substation or development of non-conventional power source. This will include the design/ engineering and construction of all electrical facilities i.e. HV/MV/UPS/DC System/ Battery charger system, Emergency power supply system etc. as per the process and codal / statutory requirement.

As per preliminary discussion with SEB, it is advised that separate switch yard will be provided for our dispatch station. Consultant to consider all allied works for substation.

- ◆ Automation system: DCS/ PLC based automation & control system to be provided & it should be hooked with Irugur (Coimbatore) Terminal TFMS system for data exchange and control at Irugur (Coimbatore). The DCS/PLC system shall be designed and implemented (in case desired by the owner) considering existing system at Irugur (Coimbatore) receipt terminal, this is also part of scope of work of this tender. Further the SIL study to be carried out & suitable SIL level system (if required) shall be provided
- ◆ Telecom system: SDH/OGES/MPLS (as decided) based telecommunication system for

voice, video, data communications in pipeline network comprised of EPBAX, CCTV, VCS, CCTV server etc. shall be provided. For local plant base communication additionally UHF/ VHF based system shall be provided and integrated with EPABX. Integration of existing CCKPL Network with this pipeline network. If required augmentation of existing network shall be done

- ◆ SCADA Servers and System with dedicated server room for various server. SCADA System of IDPL will be integrated / augmented with existing CCKPL SCADA system.
- ◆ Advance analytic system shall be provided for pipeline which shall take the inputs from various system like SCADA, APPS, NPW, PIDS etc and this system analyse the data and provide output factors for improving operating efficiency of pipeline, optimum energy point, optimum DRA injection scheme etc.
- ◆ VFD driven Mainline Pump (1 W+1 S) with HT Motor, Unit Control panel for pump selection with Machine Monitoring system, protection system shall be provided. The system shall be designed in such a way that there is maximum flexibility in selection and operation of VFDs and Pumps. No separate UCP/PLC will be considered for operation and monitoring of mainline pumps, VFD, Motor & circuit breakers. All control/ operation/ monitoring signals of mainline pumps, VFD, Motor & circuit breakers shall be integrated with station PLC/ DCS.
There is an option to use existing pumps from other location. In this case, consultant shall carry out study of data sheet of these pumps / motors and necessary overhauling of pumps / motors and compatible VFD shall be procured to meet the overall requirement of running the pump in totality.
- ◆ Booster Pump/ Basket Filters/ Scrapper launcher/ Metering system/ Control valve/ Density meter/ EOT cranes/ Corrosion Monitoring system etc. as per the process/ operational & codal requirement
- ◆ Other allied utilities/ Facilities required as per all applicable codal and OISD/ PNGRB Regulation requirement.

2.3 SECTIONALIZING VALVE STATION:

- SV stations will be placed in line with OISD/PNGRB technical standard requirements (not more than permissible distance between each section) and additionally Sectionalizing valves shall be installed on upstream and downstream of perennial river crossings and public water supply reservoirs.
- These Sectionalizing valve stations shall be provided with Mainline Valves for isolating the sections of pipeline and station in order to:
 - Limit the hazard and damage from accidental discharge from pipeline
 - Facilitate repair/ maintenance of pipeline.
 - Limit the hazards of leakage in Major Water bodies/ Rivers
- The locations of SV shall be finalized by EPCM preferably keeping in view the OISD 141, PNGRB, CP, accessibility requirement and easy approach to the station.

- The SV station will be established on the land measuring up to 50x50 M (tentative to be finalized by EPCM) keeping in view the technical requirements (Solar Panels, MOV etc) and Safety distances as per the OISD 141.
- As most of the SV station are along the highway , therefore area shall be optimized for pipeline facility and facility for EV charging is also to be considered for these locations
- The facilities shall be installed at SV station as follows:
 - a. Sectionalizing Motor Operated Valve conforming to applicable standards e.g. API 6D/ ISO-14313 etc.
 - b. Land development including Building / a Cabin for housing Electrical panels, SCADA/Telecom panels and Batteries. Separate building / a cabin for Guard and Wash room, DG set, Boundary wall, roads, drains and associated facilities.
 - c. Electrical installation including Solar PV Panels / renewable energy , Solar package electrical Distribution & control panels, Battery Charger, Power Distribution boards, Main SEB power associated panels etc.
 - d. EV charging load to be considered for designing of electrical facility
 - e. Space for other telecom operator may be placed so that OFC can be extended to the on lease basis
 - f. SCADA RTU Panel to fetch field data transmits to SCADA server to view & control of SV through HMIs.
 - g. Fibre termination, Telecommunication Panel, CCTV camera and associated systems.
 - h. Fire Alarm system including Smoke detector, Heat detectors, Manual Call points and Siren (Electric & Manual).
 - i. Cathodic Protection Panel (AC/ DC) along with Anode bed
 - j. Potable water facility
- Each SV station should be equipped with Main Power supply & back up power supply system to meet the load requirement. Power requirements of the SV station shall be fulfilled by the stand alone Solar Power system of suitable capacity and Battery backup along with stabilizer to feed the Critical load i.e. MOV, CP Panel, RTU and Telecom Panel, SCADA, Perimeter intrusion and Pipeline Intrusion detection system etc. on continuous basis and 11KV grid power supply as backup. The system shall be self-sufficient to meet the power requirement during normal as well as bad weather.
- Suitable SV building of civil structure / porta cabin material / other fast construction technique shall be adopted.
- PMC shall study fast construction methodology like prefab / 3D printing and same shall be used for SV station as directions of BPCL.

The facilities listed are indicative and minimum as to conform the OISD 141/PNGRB T4S and relevant statutory norms.

2.4 INTERMEDIATE PIGGING STATIONS (FUTURE PUMPING STATION):

- The Proposed Intermediate pigging stations shall be provided at suitable location as per hydraulic profile/ calculations so that the same can be converted to Pumping station in future as per demand requirement.

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- The IP shall be established on a suitable land area in view the technical requirements i.e. pumping station requirements, solar power plant, Fire Water facilities, suitable bending radius for pig movement and Safety distances as per the OISD 141/PNGRB T4S.
- The land area to be finalized considering the present & future facilities requirements if any and all drawing shall be developed by mentioning future pumping facilities
- The locations of IP shall be finalized in consultation with the owner during detailed engineering preferably keeping in view the OISD 141, PNGRB T4S etc., and easy approachability to the station.
- Intermediate pigging stations shall be designed and located suitably in order to carrying out effective pigging of Pipeline / as per Hydraulics which shall have Pig handling equipment (Scraper Launcher & Receiver) with associated facilities, conforming to minimum requirement laid down under OISD-141/PNGRB T4S etc.
- Land development, Boundary wall, piping area, Provision in piping so as to covert the same to Pumping station in future, control room, Electrical Substation, Telecom Room/Battery Room, Guard Room/ Washroom, Motorable Roads, Drains (Process & Plant Area), Pathways, Oil water separator & connecting with existing drains etc. as per process and codal requirement.
- Assessing the requirement of fire protection system and other safety measures as per OISD and providing Fire water tanks, fire main/ jockey pumps (redundant with automation), Fire water hydrants & Monitors, HV/MV spray system, fire alarm panels, Hydrocarbon detectors, flame detectors etc.
- Scraper launcher/receiver, Station piping, Metering, Basket filters etc. shall be provided as per process requirement.
- Power of 33KV/11KV will be supplied up to 4 pole structure by the state Electricity Board as per Load Demand that will be finalized by PMC for feeding the facilities. PMC to design the system for taking up the power from 4 pole structure up to the electrical room that includes design/ engineering and construction of all electrical facilities i.e. HV/MV/UPS/DC/ Battery charger system/EV charging system , Emergency DG power supply system as per the process and codal/ statutory requirement.
- Apart from 33KV/11 KV power supply, If BPCL decides to go for non-conventional source of Energy i.e. solar system / other green energy viz Hydrogen plant at IP Station, PMC to study and provide the feasibility of providing solar power system. In case BPCL decides for such system then PMC will design/engineer without any extra cost to owner. Further PMC shall work out the optimum plot size for setting the facilities.
- Provided Solar power system standalone will be fed from two sources i.e. Solar Power system of suitable capacity with Battery backup to fed the Critical load i.e. MOV, CP

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Panel, RTU and Telecom Panel on continuous basis and 33/11KV grid power supply. However in case of lower solar power generation and during failure of Grid Power supply, required power may be fed through the installed DG. The system shall be self-sufficient to meet the power requirement during normal as well as bad weather.

- Automation system: DCS/ PLC based automation & control system to be provided. . Further SIL study to be carried out & suitable SIL level system shall be provided.
- Telecom system: SDH/OGES/MPLS (as decided) base telecommunication system for voice, video, data communications, EPBAX, CCTV, VCS etc. for local plant base communication additionally UHF/ VHF based system shall be provided and integrated with EPABX.
- Following minimum facilities shall be proposed and designed for handling pigs and other operations of IP Station:
 - a. Major Equipment as:
 - i. Scrapper Launcher and receiver,
 - ii. Flow Meters
 - iii. Basket filters
 - iv. Sump tank of 20 KL
 - v. Slop Transfer pumps
 - vi. Sump Pumps,
 - vii. Jib Crane to facilitate lifting of Pigs
 - viii. Buried Sectionalizing Valves and valves in station piping etc
 - b. Building with Electrical room, SCADA/ Telecom, Battery Room, DG room, Guard with wash room.
 - c. Boundary wall with Concertina fencing, internal road, approach road, Water tank etc.
 - d. Pavement area to accommodate equipment, Valves, station Piping
 - e. Electrical System fed from the State board supply including DG with AMF panel, Solar Power system, Battery charger, MV panels, Distribution boards etc.
 - f. DC Battery system to feed the critical load e.g. SCADA RTU, Telecom, PIDS, Cathodic Protection Panel, ESD MOVs, etc.
 - g. SCADA RTU, Telecom, PIDS Panels.

Fire Alarm system including Smoke detector, Heat detectors, Manual Call points and Electric Siren.

2.5 TAP OFF POINT AT SANKARI DEPOT

- Tap off shall be provided on this pipeline to receive Product in to existing/~~upcoming~~ POL product tanks at BPCL Sankari depot from upcoming Irugur (Coimbatore) Devangonithi pipeline. In this regard, The PMC will study, design & engineer the facilities for receipt of MS/HSD/SKO/ATF into tanks of Sankari depot.
- Land Development & Construction of facilities suchas, Piping Area, Piping inside plant upto receipt tanks nozzle, Extension of existing Control room/New Control Room (As per requirement), extension of existing substation/New Electrical substation, Motorable Roads, Drains (Process & Plant Area), Pathways, Oil water separator & connecting with existing drains etc. as per process and codal requirement
- Assessing the requirement of fire protection system and other safety measures as per

OISD and providing Fire water hydrants & Monitors, HV/MV spray system, fire alarm panels, Hydrocarbon detectors, flame detectors etc.

- Integration of existing firefighting system, fire alarm system at (POL Terminal) with firefighting network of IDPL and fire alarm system respectively.
- Supply of Power (11 KV/433V) from existing sub Station of Sankari POL terminal or from state electricity board. PMC to study the viability of the same by visiting the site and to design/engineer the system for taking up the power from existing substation to the New electrical substation or new power supply considering power requirement for (depot and Pipeline facilities). This will include the design/ engineering and construction of all electrical facilities i.e. HV/MV/UPS/DC System/Battery charger system, Emergency power supply system as per the process and codal/ statutory requirement.
- Automation system: For TOP station; new DCS/PLC based automation & control system to be provided & it should be hooked with existing POL Terminal automation system (DCS/PLC) & TFMS system for data exchange and control between the system for smooth and safe operation of the plant. Further the SIL study to be carried out and suitable SIL level system shall be provided.
- Telecom system: SDH/OGES/MPLS (as decided) base telecommunication system for voice, video, data communications in pipeline network, EPBAX, CCTV, VCS , CCTV server etc. shall be provided. For plant level communication additionally VHF/ UHF base system shall be provided.
- SBV/Density meters/ Scrapper Receiver/IJs/ Basket Filters/Metering system/Control valve etc. as per the process/ operational & codal requirement.
- The facilities are designed to facilitate the safe and continuous product receipt at depot with proper control, accounting, monitoring and supervision of the operations. The Safety instrumentation system, SCADA shall be suitable designed to ensure the same.

Broadly the facilities provided will be as follows:

- ❖ Control room building will be provided to accommodate main Control Room, UPS room, UPS Battery Room, HVAC room, Conference room, office spaces for Operation and Maintenance staff.
- ❖ HV/MV panel/DC system will be erected in the substation.
- ❖ UPS will be installed in UPS room at CR building to feed the Critical loads e.g. SCADA Servers, RTU, DCS/PLC system, CCTV Servers and system, Flow Control Valve, Surge Relief Valve, Field instrumentation, ESD MOVs etc.
- ❖ Station Piping Area and Receipt manifold
- ❖ Major Equipment's at TOP:
 - Scrapper Receiver with Jib crane
 - Scrapper Launcher with Jib crane
 - Station block Valve
 - Basket Filter
 - Flow Control Valve
 - Flow Meters
 - Density Meters
 - Product Interface detector (Optical / Ultrasonic) based
 - Auto Sampler
- ❖ Density Meter Skid with Pump at station Block Valve area
- ❖ Product Interface detector (Optical / Ultrasonic) based

- ❖ Density Meter Skid with Orifice at Station Piping
 - Surge Relief Valve
 - Sump Tank of 20 KL with Sump pump including facilities to tanklorry loading
- ❖ PLC CPU Panels, Marshalling Panels, PDB, Interface panels in control room
- ❖ Telecom system and associated Panel, CCTV server, LED screen and VCS system in Control room
- ❖ Fire alarm system along with smoke detection, Heat detector, Manual Call Points and siren.

Other allied utilities/Facilities required as per all applicable codal and OISD/ PNGRB Regulation requirement.

2.6 RECEIPT TERMINAL AT POL TERMINAL AT BANGALORE (DEVANGONTHI)

- ❖ Product receipt shall be taken in to existing/ upcoming POL product tanks at BPCL Bangalore (DEVANGONTHI) terminal from upcoming Irugur (Coimbatore) Devangonathi pipeline Manifold. In this regard, The PMC will study, design & engineer the facilities for receipt of MS/ HSD/ SKO/ ATF in to tanks of Bangalore (DEVANGONTHI) receipt terminal.
- ❖ Land development & Construction of facilities such as SBV area, Receipt Manifold with Piping, New Control Room, New Electrical substation, Motorable Roads, OWS with Process Drains, Pathways, Drains, Culvert etc. as per process and codal requirement.
- ❖ Assessing the requirement of fire protection system and other safety measures as per OISD and providing Fire water hydrants & Monitors, HV/MV spray system, fire alarm panels, Hydrocarbon detectors, flame detectors etc.
- ❖ Integration of existing/proposed firefighting system, fire alarm system at (POL Terminal) with firefighting network of Irugur (Coimbatore) Devangonathi pipeline and fire alarm system respectively.
- ❖ Supply of Power (11 KV/433V) from existing/proposed sub Station of Bangalore (DEVANGONTHI) POL terminal or external grid or other alternative non-conventional power source. PMC to study the viability of the same by visiting the site and to design/engineer the system for taking up the power from existing substation to the New electrical substation or from other source. This will include the design/ engineering and construction of all electrical facilities i.e. HV/MV/UPS/DC System/Battery charger system, Emergency power supply system as per the process and codal/ statutory requirement.
- ❖ Automation system: For Pipeline receipt station; new DCS/PLC based automation & control system to be provided & it should be hooked with Bangalore (DEVANGONTHI) receipt Terminal automation system (DCS/PLC) & TFMS system for data exchange and control between the system for smooth and safe operation of the plant. Further the SIL study (already carried out) should be verified & finalized suitable SIL level (if any) shall be provided.
- ❖ Telecom system: SDH/OGES/MPLS (as decided) base telecommunication system for voice, video, data communications in pipeline network, EPBAX, CCTV, VCS , CCTV server etc. shall be provided.
- ❖ SBV/Density meters/ Scraper Receiver/IJs/ Basket Filters/Metering system/Control valve/ Corrosion Monitoring system etc. as per the process/ operational & codal

requirement.

- ❖ As the pipeline will be terminated at the new POL Terminal at Bangalore (DEVANGONTHI). The facilities are designed to facilitate the safe and continuous product receipt at depot with proper control, accounting, monitoring and supervision of the operations. The Safety instrumentation system, SCADA shall be suitable designed to ensure the same.

Broadly the facilities provided will be as follows:

- ❖ Control room building will be provided to accommodate main Control Room, UPS room, UPS Battery Room, HVAC room, Conference room, office spaces for Operation and Maintenance staff.
- ❖ HV/MV panel/DC system will be erected in the substation.
- ❖ UPS will be installed in UPS room at CR building to feed the Critical loads e.g. SCADA Servers, RTU, DCS/PLC system, CCTV Servers and system, Flow Control Valve, Surge Relief Valve, Field instrumentation, ESD MOVs etc.
- ❖ Station Piping Area and Receipt manifold
- ❖ Major Equipment's :
 - Scrapper Receiver with Jib crane
 - Station block Valve
 - Filters
 - Flow Control Valve
 - Flow Meters
 - Density Meters
 - Interface detector
 - Auto Sampler
- ❖ Density Meter Skid with Pump at station Block Valve area
- ❖ Product Interface detector (Optical / Ultrasonic) based
- ❖ Density Meter Skid with Orifice at Station Piping
 - Surge Relief Valve
 - Sump Tank of 20 KL with Sump pump including facilities to tanker loading
- ❖ DCS/PLC CPU Panels, Marshalling Panels, PDB, Interface panels in control room and integration of
- ❖ Telecom system and associated Panel, CCTV server, LED screen and VCS system in Control room
- ❖ Fire alarm system along with smoke detection, Heat detector, Manual Call Points and siren.

Other allied utilities/Facilities required as per all applicable codal and OISD/ PNGRB Regulation requirement.

2.7 GENERAL-COMMON FACILITIES

Following are the common facilities shall be provided for overall pipeline

2.7.1 INSTRUMENTATION:

Adequate Instrumentation and control system will be provided for safe and efficient operation.

2.7.2 SCADA & LEAK DETECTION SYSTEM:

Overall system shall be designed such that entire pipeline shall be operated from one location accordingly SCADA and compatible system shall be provided in the pipeline

2.7.2.1 For overall monitoring of Pipeline system following shall be considered:

- (1) Supervisory Control and Data Acquisition (SCADA) System
- (2) Leak detection with provision for identification/ location of leak and isolation of affected section from remote operation.

2.7.2.2 Integration SCADA and APPS system of Irugur (Coimbatore) Devangonathi pipeline with existing CCKPL SCADA. Various option like revamping of existing CCKPL SCADA Servers or Separate servers will be studied and best option for complete pipeline from Cochin to Devangonathi shall be selected consider long term benefit for the pipeline in terms of data integrity and maintenance.

2.7.2.3 SCADA:

Pipeline system equipped with SCADA shall be monitored and controlled from SCADA to ensure effective and reliable control, management and supervision of the pipeline with an objective for:

- (i) Real Time monitoring of various pipeline parameters like Pressure, Temperature, Flow, Levels and Status of equipment.
- (ii) Leak detection.
- (iii) Remote control operations for Open/ Close of valves.
- (iv) Complete operation of pipeline will be carried out through SCADA from centralized location.

Originating Pump Stations, Intermediate Pigging cum pumping Stations and Receiving/ terminal Stations, Sectionalizing Valve stations with remote operation capabilities shall have suitable field signals connectivity with the control system.

The SCADA system shall be designed to accommodate 50% future expansion (w.r.t. additional RTU and consequent pipeline length and facilities, communication channels, additional remote workstations/ stations etc.) without any limitations and without affecting the various system performance parameters.

The SV stations shall be equipped with the Remote Telemetry Units (RTUs), which shall be connected to field devices and equipment e.g. Sectionalizing Valve (MOV), Pressure Transmitter, Temperature Transmitter, Water/Diesel Level Transmitter, DG, Cathodic Protection Panel, Solar System, Battery Charging System etc. RTU shall be connected to SCADA servers through dual redundant communication channels.

The specific data of Irugur (Coimbatore) Devangonathi Pipeline shall be exchanged with the Main SCADA SMCS at Mumbai.

Receipt and Dispatch terminal shall have the SCADA servers along with associated facilities to enable the data collection from RTU via telecommunication system and reproduce/ telecast on the Human Machine Interface at manned stations.

2.7.2.4 APPS:

The Application software modules/ functions shall be based on the Operation/ philosophy requirements of Pipeline Operations to enable as a minimum to detect the leak in the pipeline and also enhance safety of the pipeline and personnel as well.

The provision for following Application Software (APPS) modules/ functions will be provided:

- (a) Leak detection and leak location.
- (b) Inventory Analysis.
- (c) Batch Tracking
- (d) Survival Time Analysis.
- (e) Pipeline transition efficiency and scrapper tracking module.
- (f) Contingency Analysis.
- (g) Planning Module.
- (h) Predictive Module.
- (i) Pump driver power Optimization.
- (j) On line network simulation.
- (k) Flow management system.

Suitable alternate Leak detection system will also be considered in addition to APPS.

Integration / Augmentation of existing Leak detection system for entire pipeline from Cochin to Devangonathi shall be studied by PMC and implemented

2.7.3 NPW SYSTEM / ADVANCE LEAK DETECTION SYSTEM :

Suitable NPW (Negative Pressure Wave) based system or advance leak detection system shall be provided which will give better result in terms of location and Leak accuracy. Consultant shall study latest system available in the market and based on the study they will propose the leak detection technology and implemented for this project.

2.7.4 ADVANCE ANALYTICAL SYSTEM :

Advance analysis system shall be provided for pipeline. This system shall take the inputs from various system like SCADA, APPS, NPW, PIDS etc and this system analyse the data and provide output factors for improving operating efficiency of pipeline, optimum energy consumption, optimum DRA injection, early failure detection of pipeline / equipment to avoid unplanned shutdown.

2.7.5 PIPELINE INTRUSION DETECTION SYSTEM:

OFC based Pipeline Intrusion Detection System shall be provided for the entire Irugur (Coimbatore) Devangonathi Pipeline. Optical Fibre based intrusion detection system is to act as an early warning system for threats to the pipeline from deliberate or accidental activity that could damage the pipeline.

Third-Party Integration: PIDS to be interfaced with SCADA and CCTV systems through a communication link whereby the PIDS user display will appear on CCTV clients or SCADA monitoring workstations. The system will be capable of sending .xml messages to third-

party systems. The third-party vendor is responsible for accepting the .xml messages through their APIs and displaying the alarm information in their format. Leak detection system through this system shall also be implemented.

Option for use of PIDS system as Perimeter intrusion detection system at SV/IP stations shall be explored and same shall be implemented based on feasibility

2.7.6 IMPRESSED CATHODIC PROTECTION SYSTEM

The Proposed Irugur (Coimbatore) Bangalore (Devangonathi) line shall be designed with the Permanent cathodic system in addition to anticorrosion coating (3LPE coating). The Permanent CP system shall be designed in accordance with NACE-SP-0169 and relevant codes, also temporary CP system shall be designed to protect the buried pipeline during construction/ laying activities. However, the Permanent Cathodic Protection system i.e. sacrificial anode and impressed current shall be brought into operation after pipeline construction completion & commissioning of PCP.

The Cathodic Protections system shall be designed by EPMC through NACE level-4 engineer by considering the Detail Engineering Survey res/Soil resistivity surveys/Soil Chemical res/Interference/Utility/Infrastructure details of the route.

The enroute ACDC CP Panels shall be installed preferable in SV/ IP stations along with anode bed for impressed current protection of the pipeline. The land shall be acquired or purchased for providing anode beds near the CP stations along the pipeline route by pipeline contractor.

If required all survey like various surveys like CIPL, DCVG etc. shall be executed independently.

Intelligent Pigging shall be carried out after commissioning of the pipeline for obtaining base line data as well as exposing areas of the threats if any which got developed during commissioning .

2.7.7 TELECOMMUNICATION SYSTEM

2.7.7.1 Pipeline shall be equipped with dedicated Telecommunication system to operate & monitor pipeline operations as prescribed in OISD 141 and relevant codes. The system shall be provided to cater the following requirements:

- a. Voice communication between Sectionalizing Valve Stations, intermediate Pigging cum pumping station, Dispatch and Receipt stations for coordination, reing and announcement regarding the pipeline Operations, safety and security matters.
- b. Data communications between SCADA server and RTUs
- c. CCTV surveillance system at SV stations, IP, Receipt and Dispatch station
- d. EPABX telephony
- e. Facsimile interface between Control rooms.
- f. Video Conferencing between manned/ Control station etc.

2.7.7.2 Integration of Telecom system CCKPL :

PMC shall study existing CCKPL telecom system and propose Integrated Telecom System

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for CCKPL and IDPL or augmentation or any other method which will improve stable system considering maintenance and overall functionality. The proposed system shall be implemented in the pipeline.

- 2.7.7.3 Telecom System shall be proposed with the latest systems in industry based on MPLS / STM16/ DWDM/OGES technologies, PMC to evaluate all the technologies that proven and have the satisfactory performances track record in industry & adopt the same.

The Proposed telecom networks shall consist of the following as minimum:

- (i) Two Optical Fibre cables of 24 fibers each laid in separate HDPE ducts along the pipeline. The OFC shall be laid at suitable depth at the both side of the Pipeline to which gives the redundancy to the Telecom system. In event of external damages to OFC the other one shall cater the all the functions of the Pipeline operations.
- (ii) Telecom Panel comprising STM16/MPLS/ OGES module with Fibre termination unit and associated interface module for RTU interface, CCTV, Phone etc.
- (iii) Network Monitoring system at Receipt/ Dispatch station
- (iv) EPABX system at Receipt/ dispatch station along with Analog, Digital, IP, Intrinsic safe mobile phones
- (v) UHF/VHF System at manned station (Irugur (Coimbatore), Sankari & Bangalore (Devangonthi)) for communication
- (vi) Video Conferencing System at both receipt and Dispatch control room with LED screen and associated modules and to be integrated with existing MMBPL VCS system.
- (vii) Video wall at Dispatch station for viewing of all consoles (SCADA/DCS/PLC/Telecom/PIDS/CCTV) at one glance.
- (viii) CCTV surveillance system with PTZ/Fixed camera at all strategic locations in Sectionalizing Valve Stations, Pigging cum pumping Station, Receipt and Dispatch station, at least 2 nos. at each station. The surveillance system may be opted for continuous recording or event/ Movement based recording in the CCTV server. CCTV servers shall be installed at both receipt and dispatch station.
- (ix) LED screens in control room shall be installed for continuous monitoring by the Operation Personnel.
- (x) Telecom system shall be powered continuously at all the stations; however, system shall be so placed which provide the alternate route to seamless flow of the data in entire system. The same shall be achieved with the ring Philosophy and one or two nodal location en-route of the pipeline stations to achieve the required philosophy.
- (xi) Lease lines with suitable bandwidth capacity shall be provided between SMCS & back up station.

Network monitoring system shall be placed at the manned station to monitor the entire Telecom modules on continuous basis, the system shall be enabled to log the alarms, events, downtimes, errors etc. and modify the parameter as and when required.

3. **NIL :**

4. PROJECT IMPLEMENTATION STRATEGY:

- ❖ The Project Management CONSULTANT (EPCM) appointed for the project shall have the primary responsibility of Concept to Commissioning the project within the agreed time schedule, ensuring quality of procurement items and workmanship of construction in line with sound established engineering practices, standards and codes along with Project Risk Management. The EPCM consultant will act as Engineer-In charge for the entire project.
- ❖ PMC should use the latest software package for Project Progress monitoring in consultation with the owner.
- ❖ The CONSULTANT to formulate number of tender packages for Materials, Services & Works in consultation with owner. CONSULTANT can combine more than one package depending on availability of contractor with multidisciplinary experience and adequate financial standing with concurrence and approval of the owner. The package may be added / modified as per project requirement during execution, PMC to carry out tendering for additional package if any without any implication.

5. PROJECT MANAGEMENT CONSULTANT'S SCOPE OF WORK/ SERVICES:

- ❖ The CONSULTANT will act as an extension of OWNER, always keeping in view OWNER's interests and advising/ guiding the OWNER on all important matters, to ensure the project is completed within cost, time and quality, safety targets.
- ❖ CONSULTANT's scope of work for the project shall cover services pertaining to conceptual studies, basic design, detailed engineering till commissioning, vendor/ contractor identification, procurement activities including inspection/ co-ordination and expediting, short listing of contractor, tendering, recommendation for award of work, preparation of LOA and Purchase Requisitions, Management of contract, Stores management, Construction supervision including quality assurance at site, Ensure safety at construction site as per OWNER's laid down guidelines, Project Risk management, all necessary technical support to OWNER for liaison with statutory authorities for construction, approvals, providing drawings, commissioning, closing of contracts, material reconciliation, support for all audits/ arbitration and overall project management including resource planning, time monitoring & cost control.
- ❖ THE SALIENT FEATURES OF SCOPE OF CONSULTANT'S WORK FOR EACH FACET OF PROJECT ACTIVITIES IS DESCRIBED UNDER:

5.1 OFFICE WORK:

5.1.1 Finalization of project execution methodology and approval from owner.

5.1.2 Adoption of BPCL purchase procedure for procurement of goods, services and works.

5.1.3 BASIC ENGINEERING & OTHER WORKS FOR PROCEEDING TO DETAILED ENGINEERING STAGE:

This shall cover the following:

- a) Study of existing stations falling in IDPL & CCKPL pipeline for integrated operation of CCKPL and IDPL and integration of TFMS, fire fighting, Plant ESD etc. system as applicable. Existing tanks shall be studied for suitability for product dispatch and
- b) Preparation and finalization of Basic engineering that includes Process design Package, all Engg. Design basis (Piping, Mechanical, Civil, Electrical, Instrumentation etc.) P&IDs, HAZOP, HAZID, SIL study, Pipeline optimization study, surge analysis etc. and acceptance from owner for carrying out detailed engineering considering pipeline length, TOP at Sankari, latest applicable standards/ guidelines.
- c) Preparation of all MR's and specification of all equipment.
- d) Carry out Pipeline optimization/ hydraulic study and Surge analysis considering DRA and without DRA option.
- e) Review of Detailed Route Survey/Alignment sheets/Cadastral Survey/Soil investigation/ Soil Resistivity/Geotechnical Survey of Water bodies for detailed engineering purpose (As applicable). In case data is not available then carry out Geotechnical survey etc for obtaining data.
- f) Consultant shall undertake any other study required for successful designing of the project facilities without any extra cost to owner.
- g) Finalization of Conceptual designs of Telecommunication, Supervisory Control and Data Acquisition (SCADA) inclusive of leak detection system, Alternative Leak detection system, PIDS system and PLC/DCS based station automation etc (As applicable).
- h) Preparation of overall primary project cost estimate within one month after start of the PMC job and detailed project cost estimate at a later stage.

5.1.4 Review the EIA/ RRA prepared by the third party agency and take all mitigation measures during the design and construction of the project.

5.1.5 Detailed engineering including residual engineering activities till commissioning.

- (i) Finalize locations for Pigging stations/ sectionalizing Valve stations/ CP Stations etc. in view of planned facilities. Carrying out Soil Investigations/ required study through contractors/self for facilities of Dispatch station, SV, IP, Receipt terminals etc. is in the scope of consultant.
- (ii) Review, update and adopt soil investigation results.
- (iii) Carry out required study for selection of power source for Dispatch, SV, IP & Receipt Station and finalize of the same.
- (iv) Carry out pressure calculations and stress analysis, Buoyancy Analysis, Seismic Analysis of Pipeline/piping system etc. as applicable for the entire pipeline system.
- (v) Select Booster and Main line pumps and finalize optimum pumping configuration in

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consultation with Owner.

- (vi) Preparation of Equipment data sheets for all facilities i.e. Electrical, CP system, Instrumentation, Mechanical, Rotary equipment, Static equipment, Civil, Architectural etc.
- (vii) Prepare Material Take off (MTO), Bill of Material (BOM) for all procurement items.
- (viii) Preparation of Material specifications for all items; Direct Purchase by owner & Bought out items by contractors.
- (ix) Draw up Specifications for Pipeline laying across Roads, Rail, River crossings, Seismic areas, Water logged area etc. based on input of Geo-tech & Detailed engineering survey being carried out by Owner/contractors and various stipulation of Govt./approving agencies.
- (x) Preparation of complete tender documents for Pipeline laying & allied works e.g. HDD, Composite Mechanical, Civil, Electrical, Instrumentation, SCADA, Telecom, PIDS etc.
- (xi) Preparation of Construction drawings as per following as a minimum:
 - a) Prepare typical construction drawings for laying pipeline in various type of Soils/terrain including slope stabilization etc., HDD, Dispatch station, SV stations, Pigging cum pumping station, Receipt terminal etc. for tendering and approvals.
 - b) Prepare Alignment Drawings and other relevant details for pipeline construction & HDD.
 - c) Arrange to prepare detailed “approved for construction drawings” for Pipeline, Dispatch Station, SV Stations, IP Station, Receipt station etc.
 - d) Prepare single line diagrams of Electrical systems and finalize Electrical load list for power and lighting loads to identify equipment ratings.
 - e) Preparation of cable schedule, termination schedule, finalization of lengths as per actual plot size, interface wiring diagram between various systems etc.
 - f) Finalize electrical, instrumentation, CP, SCADA, Telecom, PIDS etc. panel details at Irugur (Coimbatore) Despatch terminal, IP station, SV stations and Bangalore (Devangonathi) Receipt Terminal.
 - g) Prepare detailed Area classification drawings for segregation of P/L facilities at Irugur (Coimbatore) & Bangalore (Devangonathi) terminal.
 - h) Prepare layouts of facilities at all stations.
 - i) Preparation of layout of pigging cum pumping station with proposed and future pumping & associated facilities in consultation with Owner.
 - j) Prepare drawings for site development & construction of approach and internal Roads, Pathways, Drains, Culvert, OWS with process drains etc. at Dispatch/SV/ Pigging cum pumping/Receipt stations.
 - k) Provide design data/ drawings/ calculations & all the necessary technical support as required for statutory clearances/ NOC's from various Govt. / other agencies.
 - l) Integration of SCADA, APPS & Telecommunication system of CCKPL with this proposed pipeline.

Any other activity considered necessary for completing the project shall be in the scope of EPCM.

- (xii) To review/ approve the drawing/ documents prepared by vendors/ contractors for execution of the works as per the below mentioned time lines:
 - Code 2 approval within 10 days of receipt of design/ drawings/ details
 - Code 1 approval within 7 days of receipt of completely complied design/ drawings/ details documents.

Review of design/ drawings/ documents within 5 days of receipt of vendor documents.

- (xiii) To carry out inspection at Vendor's works for direct procurement items as well as A class (Critical Items) being procured through the site contractor.
- (xiv) Making detail Pre Commissioning/ commissioning procedure, operating & Control manuals, pre- commissioning/ commissioning checks/ Compliance to OISD check list/ Compliance to punch points of check list issued by user/Commissioning assistance, Disaster Management plan etc. as per requirement.

NOTE:

- (i) Consultant shall consider dedicated design engineers of each field/ specialty/stream so that design, detailed engineering, approval of drawings submitted by vendor shall be carried out without any delay due to assignment of other client's job to that engineer.
- (ii) Any other activity considered necessary for completing the project shall be in the scope of EPCM.
- (iii) Consultant to note that owner may go for minimum two revision in approved document based on the user experience or considering project completion or improvement / betterment. Accordingly, consultant shall adopt those changes and same shall be further implemented. No extra charges shall be paid for these revisions in approved document and its implications.

5.2 PROCUREMENT SERVICES OF GOODS,SERVICES & WORK CONTRACTS:

5.2.1 Following are description of activities for Goods, service & works contract:

- (i) EPCM shall propose item-wise Vendor List to BPCL for each of the categories of procurement of Goods, Services & Works contract. Such Vendor List shall be based on their own Master Supplier List (MSL)/ Contractor List prepared based on previous project experience. The EPCM shall also confirm that all vendors proposed by them are qualified financially and technically to participate in the procurement tenders for the project.

It is required that EPCM has a robust and well defined process of vendor registration, review and assessment and the vendor list is dynamic and constantly updated. EPCM shall also ensure that adequate publicity like open advertisement, online web information etc. are issued for encouraging registration/enlistment of vendors/contractors for the required items, services, works contract etc. for project. The robustness of the EPCM's process of vendor enlistment shall be reviewed by BPCL, at the beginning of the project; the vendor list thus prepared at the start of the project shall be termed as Master Vendor List (MVL).

- (ii) In case of limited tender, where adequate number of parties are available in-house with CONSULTANT as per the approved MVL, prepare list for the same for each package to be procured and obtain approval of OWNER for the same. If any change is to be made to this list, i.e. in case of any addition/deletion in the EPCM Master Supplier/Contractor list, the same will be done by EPCM. OWNER may add registered vendor or delete names as per their in-house record of performance of such contractors. In case, any name is added by OWNER, responsibility for verifying credentials rest entirely with CONSULTANT before issuance of tender. EPCM shall proceed based on BPCL approval
- (iii) In case, adequate number of vendors for procurement of particular material is not available with CONSULTANT/ OWNER or the estimated value is more than INR 5 Crores (inclusive of taxes and duties), pre-qualification/BQC shall be prepared by EPCM and same shall be submitted to the Owner for their concurrence for floating the open tender enquiry. BPCL shall reimburse the consultant expenses for press advertisement(if any) on actual on submission of necessary documents
- (iv) Finalize General conditions of contract/ Special conditions of contract in consultation of the Owner and adopting BPCL purchase guidelines also for procurement of Goods, services & work contracts.
- (v) Prepare draft tender documents, obtain comments from OWNER, incorporation of the comments if considered relevant after discussion, finalize tender document, seeking OWNER's approval of the final tender document for issue of tenders and float tenders to parties as approved. The document may be undergo 2nd revision after approval from owner, consultant shall adopt the revised document for further proceeding.
- (vi) Consultant shall prepare detailed estimate of the works in line with market rates & local construction material rates before the floating of the tender. Consultant shall provide the detailed basis of the estimate to the owner along with estimate and estimate will be reviewed by BPCL.
- (vii) Carry out technical and commercial evaluation of bids, prepare recommendation for short-listing of parties and opening their price bids after OWNER's approval, prepare evaluation of bids, formulate recommendations for negotiation/ award for OWNER's approval within maximum 2 months from date of opening of technical bid. In case negotiation is to be carried out, Consultant shall assist OWNER during price negotiation, prepare draft LOA, Detailed LOA, Draft Purchase Order, complete contract documents and Agreement.
- (viii) Prepare complete contract documents for issue by OWNER.
- (ix) PMC shall certify reasonableness of BQC estimates, detailed estimates for different tendering packages and prices quoted by the recommended bidders for all works contracts and purchase orders. They should also compare lowest paid unit price/ in

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house estimate and shall furnish the working statement wherever applicable and recommend for negotiation when there is a major deviations exceeding 10% and take active participation in negotiations.

- (x) Approve vendor drawings, design calculations, QAP etc. as per the following time lines:
Code -2 Approvals – within 10 days of receipt of vendor documents.
Code -1 Approval - Within 7 days of receipt of complied code-2 document.
Review - within 5 days of receipt of vendor document.
- (xi) Carry out stage wise inspection; witness Factory acceptance tests at vendor's works (indigenous/ imed. Witness and certify performance/ acceptance tests as per purchase specifications and issue of inspection release note. Scope includes carrying out FAT/SAT, Issuing completion Certificates, SAT's re, Trial runs etc. This also includes visits to foreign vendor premises for this purpose. Issuing order closer note along with completion of documentation re.
- (xii) The proper control of purchased materials includes both expediting and inspection of materials throughout the manufacturing cycle.

(Consultant shall perform of his own if they have dedicated Inspection wing or assign to following approved third party Inspection agencies LRIS, EIL, CEIL, TUV and DNV) inspection and expediting of free issue materials supplied from Indian and foreign sources.)

(Vendor to note that for payment towards inspections of owner supplied materials both indigenous & foreign supplied items shall be made separately as per the SOR item)
- (xiii) Monitor progress at vendor's works periodically & expedite procurement activity & sending monthly re to Owner informing the procurement status/ bottlenecks.
- (xiv) The objective of this material control effort is to ensure continuous progress in the fabrication or manufacture of equipment and materials, and to ensure that such fabrication of manufacture is accomplished in accordance with the technical requirements and specifications of the project. Accordingly, inspection shall be performed by Consultant or Consultant appointed organizations approved by Owner and statutory bodies in accordance with data sheets, drawings, and specifications incorporated in the commitment documents transmitted to the vendor. Expediting of all purchase orders, including all revisions or amendments thereto, for this project shall continue from the time of commitment until the material or equipment has been shipped.
- (xv) CONSULTANT shall arrange to take measurements of items supplied by vendors in presence of supplier's & OWNER's representative and certify supplier's bills for payment. OWNER will arrange to make payments thereafter.

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- (xvi) Stores management (including dump sites) for supply items including receipt, storage, issue of materials to contractors, maintaining records and reconciliation of the same.
- (xvii) Consultant to make all efforts so that surplus material generated from the project does not exceed 2% of material cost.
- (xviii) For any items included in the scope of supply of Owner/contractors/ vendors, CONSULTANT shall essentially carry out all the activities for timely delivery at site with right quality.
- (xix) Any other activity considered necessary.

5.2.2 WORKS CONTRACT PACKAGES (TENTATIVE, TO BE FINALIZED WITHIN PROJECT EXECUTION METHODOLOGY BY EPCM):

It is planned to execute the project through conventional method i.e. through item rate contracts. The number and scope of individual contracts shall be finalized by CONSULTANT in consultation with OWNER depending on availability of contractors with multidisciplinary experience and adequate financial standing. Tentatively the following contracts are envisaged:

- (I) Pipeline Laying:
Fabrication & Laying of entire pipeline & Optical fibre cable 2 nos. in HDPE ducts (incl. Jointing) including installation of Sectionalizing valves, road/ rail/ nallah / canal/ river crossings, minor HDD etc. Design & providing Temporary & Permanent Cathodic protection system/including mitigation measures for the pipeline etc. (The pipeline laying job to be broken up into four nos. of sections). Detail/ residual engineering till commissioning for P/L laying tender shall be in PMC scope.
- (II) HDD Tender:
Fabrication & Laying of pipeline with Optical fibre cable (incl. Jointing) including installation of Pipeline through major canal/ river crossings etc. Design & providing Temporary Cathodic protection system/including mitigation measures for the pipeline etc. (The HDD job can be broken up into number of sections/ contractors). Detail/ residual engineering till commissioning for P/L laying tender shall be in PMC scope.
- (III) Electronic Geometric Pigging work may be executed through pipeline tender/a separate tender for dent/ Pipeline thickness verification.
- (IV) Composite works at stations: Mechanical, Electrical Instrumentation site work package (Separate tender package of each discipline) :
Fabrication & installation of station piping at Despatch Station, Pigging Stations & Receipt Station includes installation of associated equipments (free issue materials by owner & Bought out material by contractor), Firefighting Pipeline network, Fire water spray system etc.

Procurement/ supply/installation/testing of pipe all size for station piping work, all type of valve up to 2 “size, Pipe fitting, flanges of all Sizes & rating, EOT Crane etc.

All electrical works related to power distribution, lighting, Earthing etc. including Cabling, Installation/testing/commissioning of Owner’s free issued Material e.g. Transformers/ HV Package/ MV Package/UPS/DC systems/DG sets etc and bought out material by contractors.

All instrumentation work including Cabling, Installation of owner’s free issued materials e.g. Flow meters, Control Valves etc. and bought out material by contractors.

(v) Civil works:

Land development, Area grading as per site requirement, Construction of control room cum electrical substation, Pump house, Piping/Process Area, Oil water separator including process drains, roads, drainage system, pathway, AC package, Clean Agent flooding system (as required), Lighting for Control room, bore well, Boundary wall (if applicable), Demarcation of Licensed area etc. as per the site requirement at Irugur (Coimbatore) Dispatch and Bangalore (Devangonthi) Receipt station.

Land development, Area grading as per site requirement, Construction of Boundary wall, oil water separator including process drains, road, drainage system, pathway, AC package (if any),able Firefighting system, Control building including Electrical/Telecom/Battery Room/Guard Room/Washroom etc., bore well etc. as per the site requirement for IP stations & TOP stations .

Land development, Area grading as per site requirement, Construction of Boundary wall, road, drainage system, pathway, AC package (if any),able Firefighting system, Control building including Electrical/Telecom/Battery Room/Guard Room/Washroom etc., bore well etc. as per the site requirement for SV stations.

5.2.3 PROCUREMENT SERVICES OF GOODS:

CONSULTANT shall identify direct procurement items & equipment (Indigenous & Imed) and plan the procurement of long lead items/expensive material at the required time/optimum cost considering their lead period.

All the critical items for the projects are to be procured through preparation of MR & RFQ by EPCM. The tentative lists of items are as under for procurement packages:

- ❖ Line Pipe, Insulating Joints, Flow Tees, Scraper Launcher/Receiver, Line Material, OFC etc
- ❖ Mainline/Booster Pumps, DG sets/ Station Piping Material, Basket Filters, Check & Globe Valves, Ball valve, plug Valves, Double block & bleed valves, Control valves, Gate valves, Sectionalizing valves etc
- ❖ Metering unit, flow meters, Density Meter, Ultrasonic flow meters/Mass Flow meters etc
- ❖ SCADA & APPS System, Telecom system, Turnkey Instrumentation including Fire Alarm system including all field instruments, PCMS/PITS system etc.
- ❖ Transformers, HV system, MV system, UPS, Battery & Battery chargers, HT/ LT Capacitors, Solar system etc.

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- ❖ Spares such as Commissioning spares, Mandatory spares & Maintenance spares etc. as applicable for various items of procurement shall be included in the tender/ MRs.

NOTES:

- (i) The consultant shall identify critical package viz Line Pipes and long lead items like Main Line, valves etc. and consultant shall ensure that these critical package shall be awarded within 3 months from date of placement of LOA of Part-A.
- (ii) The consultant should ensure that all procurement for goods, services & works contract are to be awarded within maximum 8 months from the date of placement of LOA of Part-A for EPCM services, so that the construction period of maximum 18 months are available for mechanical completion of project which is within 32 months from the date of placement of LOA of Part –A for EPCM services.
- (iii) All tenders for Procurement Items, Services and works contracts are to be floated through BPCL's E- tender al only. Necessary access on the BPCL's E-tender al will be provided by BPCL to the successful consultant for floating of Tenders, Technical & commercial evaluation, issuing addendums & corrigendum's etc.

5.3 SITE SUPERVISION (CONSTRUCTION, SUPERVISION INCLUDING MATERIALS HANDLING SERVICES)

- 5.3.1** Establishment of RCM and Camp office – RCM /Camp Office facilities have to be arranged by the consultant for its site staff at their own cost. Necessary arrangement of Lodging, boarding and transportation of its site staff have to be made by the consultant at their own cost. The offices to be established at Coimbatore, Sankari, Dharmapuri, Devangonthi. This is minimum requirement, however consultant may establish additional camp offices based on the project requirement.
- 5.3.2** Carry out the construction supervision of activities viz. Pipeline laying, HDD, Composite Mechanical, Civil, Electrical, Turnkey Instrumentation, SCADA, Telecom, PIDS, CP system etc. related to Pipeline system and allied facilities for IDPL and CCKPL.
- 5.3.3** Finalize construction related documents such as work procedure for each activity, quality assurance, safety at construction site, qualification of welders etc. and ensure their implementation.
- 5.3.4** Review of detailed construction schedules (bar-chart), Manpower/ machinery deployment plans submitted by various site contractors and monitoring the same periodically so as to complete the project within schedule.
- 5.3.5** Review, co-ordinate and supervise closely contractor's work to ensure that the work executed and supplies made are strictly in accordance with the specifications laid down in the contract.
- 5.3.6** CONSULTANT shall have overall responsibility for management of work sites and coordination among contractors to ensure the successful mechanical completion and commissioning of the project as per contractual time frame.

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- 5.3.7** Review progress of work weekly/ monthly/ quarterly with participation of head office and site representatives from OWNER/ Consultant/ Contractor, identify bottlenecks and take corrective measures to meet the target.
- 5.3.8** CONSULTANT shall arrange to take measurements of works along with contractor's representative and certify all bills for payment. OWNER's representative may also accompany during physical measurement and will arrange to make payments thereafter.
- 5.3.9** CONSULTANT shall certify material reconciliation statements prepared by the contractors for OWNER supplied materials and obtain OWNER's approval.
- 5.3.10** CONSULTANT shall arrange for preparation of As- built drawings through contractors duly certified by them and submitted in 6 copies with reproducible/Native files (AutoCAD etc.) to OWNER.
- 5.3.11** Issue certificate for Mechanical completion of works.
- 5.3.12** To provide necessary assistance to Owner for conducting negotiations with contractors for items, which are likely to undergo large variations in various awarded contracts. PMC to carry out the rate analysis based on the market rate and justify the reasonability of the rate etc. as per the tender conditions.
- 5.3.13** Certify/ settle final bills for closing of contracts along with all desired justifications.
- 5.3.14** Conducting Site Acceptance test for Telecom/SCADA & APPS/ Instrumentation system/PIDS/Solar Power systems etc. to establish the design parameter with actual performance parameter.
- 5.3.15** To adhere CVC guide line and to provide technical assistance/ back up support for any audits/CTEs queries.
- 5.3.16** PMC shall update themselves with PPE policies issued by Ministry related to procurement and communicate OWNER for its applicability
- 5.3.17** Adherence of MOPNG guide lines for major project.
- 5.3.18 MATERIALS HANDLING SERVICES:**
- i. Store management shall be in the scope of the Consultant and shall include activities like management of receipt/storage, issue and reconciliation till the completion of the Project.
 - ii. Consultant shall keep provision in Line Pipe tender packages for dump yards (to be developed & maintained, secured by Line Pipe vendor) each for storing/stacking approx. 100 km pipe line, bends along pipe line route, besides at Dispatch Terminal & Receiving Terminal . Dump yard management shall be in the scope of the Consultant and shall include activities like receipt, storage, issue and reconciliation of line pipe at

the end of the Project.

- III. For free issue materials other than Line Pipes BPCL shall provide land space for storage of Project Material at Irugur (Coimbatore) and Bangalore (Devangonathi). BPCL shall also provide necessary security arrangement at these places. Store management shall be in the scope of the Consultant and shall include activities like receipt, storage, issue and reconciliation of FIMs at the end of the Project. If required Suitable store / ware house shall be constructed by PMC in-consultation with Owner.
- IV. Consultant shall keep all project spares, O&M Spares, mandatory spare supplied along with each package in safe place under his custody and same shall be reconciled and handed over to respective location after or before pipeline commissioning to operation team. /

5.3.19 PRE-COMMISSIONING & COMMISSIONING:

- I. Prepare pre-commissioning and commissioning procedures.
- II. Check and approve contractor's manpower, equipment and material deployment for pre-commissioning and commissioning activities. (Carry out field checks and trial runs necessary to certify readiness for commissioning of individual systems.
- III. Coordinate & witness System tightness tests/Hydro testing etc. as applicable for Pipelines, Relay testing & insulation tests etc. for electrical cables & equipment.
- IV. Any other activity deemed necessary for pre-commissioning.
- V. Define successful commissioning in terms of proving of facilities for their rated performance.
- VI. Declare readiness for commissioning of entire pipeline system including Terminals and hook-up with existing facilities at Irugur (Coimbatore) & Bangalore (Devangonathi).
- VII. Co-ordinate with vendors for arranging their commissioning Engineers and supervise commissioning.
- VIII. Assist Owner in preparing compliance documents for submission to various authorities for obtaining NOC'S for commissioning of the pipeline, if any
- IX. Deploy necessary manpower for commissioning of pipeline. Scope includes supervising commissioning of pipeline to the satisfaction of owner.

5.3.20 POST COMMISSIONING:

- I. After successful commissioning, the scope of PMC includes post commissioning stabilization of 3 months; in which EPCM bidder to ensure that the site related problems of equipment/package vendors/ system are resolved, SAT, PCP Surveys, Final Documentation/Handing over the system to the satisfaction of owner are completed within a period of 3 months from commissioning.
- II. The Consultant shall also make the Operation & Control philosophy (As per built system including interlocks list for all stations), Disaster Management Plan for the Operation of the Facilities for the Project.
- III. Consultant shall ensure that the issues related to various contracts are settled amicably with the contractors/suppliers. Consultant shall provide necessary

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assistance to the owner and prepare suitable replies to address the claims/ grievances/ disputes of the contractors/ suppliers, as and when they arise.

- IV. Despite of the above, if any contractor/supplier imposes Arbitration proceedings on BPCL, the consultant's scope of work includes, providing necessary assistance to BPCL in connection with these proceedings for a period of 3 years from the date of commissioning of the project.
- v. All the orders / contracts shall be closed within 2 months from commissioning or contractual date of completion. Closure report / recommendation shall contains detailed analysis with evidences. In case their delay in closure of order of contract beyond 2 months then same shall be treated as delay in completion and accordingly liquidity damage shall be imposed.

NOTES:

- I. The cost towards extending services for post commissioning activities (SAT/PCP Survey/Handing over of facilities/Final documentation etc.) & arbitration support (if any) shall be suitably built-in the quotes of Part-A, Part-B & Part-C& no extra cost towards these services shall be paid to EPCM.
- II. All necessary Manpower/ Infrastructure facilities/Vehicles shall be maintained by consultant for Site/ Office for successful commissioning, post commissioning etc.

5.4 OTHER DETAILS THAT FORMS SCOPE OF WORK FOR COMPLETION OF JOB:

5.4.1 EPCM Manpower Details:

EPCM to note that quality of HQ/site manpower is essential part of this tender. EPCM shall select the manpower such that they have desired qualification and experience for the job they are handing, they should have high integrity and passion to work in the pipeline.

A. Minimum Experience Criteria for Part-A, Part-B & Part-C Scope of work activities:

Bidder shall have key personnel including Project Manager, Resident Construction Manager (RCM), Contracts / procurement Manager, Inspection/ Expediting/ QC Manager and Engineering; Process Manager on their permanent roles and their experience shall be as follows:

- Project Manager- Min. experience of 10 years & two Pipeline Project handled and successfully completed & commissioned
- RCM - Min. experience of 8-10 years & two Pipeline Project handled and successfully completed & commissioned.
- Spread Incharge - Min. experience of 8-10 years & one Pipeline Project handled and successfully completed & commissioned.
- Contracts / procurement Manager, Inspection/ Expediting/ QC Manager, Engineering and Process Manager - Min. experience of 05 years & one Pipeline Project handled and successfully completed & commissioned. CP designing shall

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be carried out by NACE Level-4 engineer and implementation shall be carried out by NACE Level-2 engineer at site.

Also the Resume of the above personnel’s should be submitted along With the bid to support the facts.

During actual execution of contract bidder shall submit sufficient CV’s of the probable site staff for each position along with their preference. The recommended candidate(s) shall be interviewed by the Owner and based on the confirmation from the Owner the candidate shall be deployed.

- B. Manpower requirement for Preparation, Evaluation of commercial part tenders: For preparation of commercial part of tender and commercial analysis of the bids received against various tenders (domestic/ International) floated for this project through PMC

PMC shall have dedicated commercial expert team comprised of qualified CA, CFA financial analyst who has having knowledge about the taxes in India, INCO terms, various circular of CVC and policies of Indian government. They shall also have the capability to analyse/authenticate the commercial documents such as Balance sheet, P&L statement & CFS submitted by bidder for qualification of the bids.

PMC Shall update themselves with the various policies issued by Govt of India applicable to Public Enterprise like BPCL and discuss for its implementation.

- C. Construction Spreads:

Minimum Four (4) spreads for pipeline length of approx. 355 KMs shall be considered for project execution. Dedicated manpower and resources shall be deployed by EPCM in RCM office and each spread to carry out construction/site related activities and a dedicated team shall be deployed for construction activity at Intermediate pumping station& TOP. The tentative Pipeline laying spreads shall be as below;

- Spread 1 : Irugur (Coimbatore) to 70. Km Existing ROU M)
- Spread 2 : Ch. 70 Km to Ch. 138 Sankari KM
- Spread 3 : Ch. 138 Km to Ch. 210 IPS (proposed IP-3)
- Spread 4 : Ch. 210 to 355 KM

- D. Required of Manpower at site that has to deployed by consultant during construction period:

- E. Required manpower at sites to be deployed by the consultant for site related activities shall be as follows:

- i. RCM Office (Common for all sections At any time Minimum Manpower)

Sr.	Description	Manpower	Month
1	RCM/Construction I/C	1.0	21
2	Planning & Monitor. Staff	1.0	18
3	QC head	1.0	18

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4	HSSE head	1.0	18
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ii. Spread office – manpower to be deployed for all 4 spread during construction period of 18 months

Description	Manpower	Month
Spread Incharge (a)	4.0	18
Civil Engr.	4.0	18
Mech. Engr.	4.0	18
Elect. Engr. (a)	3.0	12
Instru / Telecom Engr (b)	3.0	12
Quality Control (c)	4.0	18
HSSE Engineer	4.0	18
site store manager (d)	3.0	18

- (a) Spread Incharge of respective location where DT and RT are located shall be overall responsible for progress of DT / RT.
- (b) Electrical and Instrumentation / Telecom Engineer shall be mobilized after three months of main contractor mobilization and stations works of entire pipeline shall be equally distributed for their supervision except DT and RT.
- (c) QC Engineer & HSSE Manager of respective location where DT and RT are located shall be overall responsible QC and HSSE related aspects at DT / RT.
- (d) Site Store manager shall be deployed at three office at Coimbatore, Sankari and Devangonhi

iii. At each station viz DT and RT dedicated Manpower as per following shall be deployed :

Description	Manpower	Month
Civil Engr.	1.0	12
Mech. Engr.	1.0	12
Elect. Engr. (a)	1.0	8
Instru / Telecom Engr (a)	1.0	8

iv. Peak Manpower for 10 months :

During Construction stage in case required additional spread may be opened to expedite the project. In order to expedite the project following manpower shall be deployed as per instructions of owner.

Description	Manpower	Month
Spread Incharge	1.0	10

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Civil Engr.	1.0	10
Mech. Engr.	1.0	10
Elect. Engr. (a)	1.0	10
Instru / Telecom Engr (a)	1.0	10
Quality Control	1.0	10

HSE engineer mentioned in clause (ii) of their respective spread shall be responsible in case this additional spread falls in their assigned jurisdiction.

v. Manpower during commissioning and closure period of 3 months:

In order to commission and closure of the contract following manpower shall be kept at site for smooth commissioning and closure of the contract

Description	Manpower	Month
Spread Incharge	4.0	3
Civil Engr.	2.0	3
Mech. Engr.	2.0	3
Elect. Engr. (a)	2.0	3
Instru / Telecom Engr (a)	2.0	3

vi. Conditions of Manpower deployment :

- (a) As per opening of spread / work fronts Owner shall instruct Consultant to deploy Manpower
- (b) Manpower / staff shall be deployed within 10 days of instructions of owner at the site.
- (c) Once a staff is deployed at site, shall continue at the site for minimum three months. After 3 three months, owner may ask consultant to demobilize manpower based on the progress of the project / front availability.
- (d) Mobilisation and demobilization of manpower / staff shall be done with mutual consultation. Consultant shall not be liable to raise any time overrun for completion of project on account of mobilization and demobilization of manpower.
- (e) If any site staff is going on long leave (more than a week), necessary replacement shall be made without any additional cost to the owner.
- (f) The placement of manpower and their duration of placement shall be done in such a manner that at no time the work is hampered for want of experienced site staff.
- (g) As per deployment plan if any manpower is demobilized, it is imbibed that remaining work shall be taken care by the balance manpower. No extra claim on account of manpower demobilization shall be paid.
- (h) Consultant shall be responsible for Completion of project within schedule and manpower deployment as per deployment plan shall not be considered as reason for delay.
- (i) Recovery of two man-month charges (respective cadre) for Non-Deployment of staff shall be carried out from running invoice.

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- (j) Recovery of one man-month charges (respective cadre) shall be carried in case absence of staff for more than 4 days in a month.
- (k) The above manpower charges shall be paid for project completion. However additional manpower deployed for improving progress shall be deployed by Consultant and charges shall not be paid for this augmented manpower.
- (l) Manpower consumed due to non-performance / poor performance of contractors shall be not considered for payment.

NOTES FOR EPCM MANPOWER:

- (I) To meet the overall project objectives, there is a target of 18 months for all site works completion (synchronizing with mechanical completion period of 29 months). Therefore Work may be carried out at sites on Single / Two shifts rotation basis depending upon circumstances and pace of progress to complete all site works to meet mechanical completion target. Accordingly EPCM to plan the deployment of their manpower.
- (II) The placement of manpower and their duration of placement shall be done in such a manner that at no time the work is hampered for want of experienced site staff. However the deployment of experienced site staff shall be augmented by the consultant based on the site and work requirement. A separate supervision staff for terminal and Pipeline works should be deployed during the entire construction period as per the site/ progress requirement.
- (III) Sufficient manpower should be deployed during pre-commissioning and commissioning period and at no case the pre-commissioning and commissioning should hamper due to deployment of site staff.

5.4.2 COST ESTIMATES:

The Project cost estimate indicating foreign exchange and Indian rupee components shall be prepared. Consultant to provide primary cost estimate and detailed cost estimate as detailed below:

- (I) Immediately after award of EPCM job consultant to prepare Primary cost estimate with one month. The cost estimate shall be done for overall project considering various equipment, facilities, goods, and service etc. for completion of the project with an accuracy level of +/- 10%.
- (II) Detailed cost estimate with its basis for individual package shall be prepared by CONSULTANT and sent to Owner for comments if any and final cost estimate shall be forwarded to Owner along with each tender document before floating of tender.
- (III) Final cost estimate are provided for the entire project with an accuracy of plus/ minus 5% after all the jobs are awarded. The final cost estimate for the entire project once made shall remain valid till project completion. The above final cost estimates shall be finalized in consultation with OWNER within 4 weeks of finalization of all orders.
- (IV) EPCM shall provide Facility wise final cost of each asset for the project so that Owner will be able to capitalize and Asset creation of the project.

5.4.3 DOCUMENTATION:

- (I) Consultant shall arrange AS- BUILT drawings & documents in 6 sets from various

vendors/ contractor along with re-producible (PDF as well as Native files) in portable Hard disks.

- (II) Compile Technical Data Sheets & process parameters for all equipment's/ machinery/ systems.
- (III) Consultant shall arrange Operating & maintenance manuals from vendors/ contractors in 6 sets and soft copy in Hard disk.
- (IV) Consultant shall also prepare commissioning re detailing actual performance vis- a vis rated performance.
- (V) Compilation of Inspection release notes/ certificates for all the materials
- (VI) Compilation of various Reconciliation statements for direct supply items.
- (VII) Consultant to provide 3 hard copy sets of MR & PR of each procurement package and tender documents along with 1 set of soft copy in portable Hard disk drive.
- (VIII) Consultant shall store all data which can be accessible through file document platform or GIS platform so that it can be easily migrated.

5.4.4 TRAINING:

Consultant shall include training to Owner 's project/ operating personnel to facilitate supervision of erection/ testing activities & operation/ maintenance of the equipment's/ systems in the scope of relevant contracts/ purchase orders.

5.4.5 PROJECT MANAGEMENT & PROGRESS MONITORING:

- (I) Consultant to provide indicative Project Schedule (Gant chart) and Manpower Mobilization schedule (for site work) with the bid document and the Final Schedule (Gant chart) and Manpower Mobilization schedule within 60 days of placement of Order (LOA). The consultant to prepare L-1 to L-4/6 schedule for the project along with preparation of Turnaround document and shall obtain the approval of owner within 60 days of award of EPCM job. Further, the consultant shall carryout Earned Value analysis for the entire project.
- (II) EPMC shall make best effort schedule by targeting first Target Milestone of Mechanical completion including hydro testing & Pre-commissioning checks within 24 months from the date of start of work for Part- A & Second Target Milestone of 29 months from the date of start of work of Part-A.
- (III) Preparation of Pipeline project scope and project schedule in consultation with OWNER.
- (IV) Preparation of Project Status Reports along with S – Curve (physical as well as financial) for submission to various agencies.
- (V) Finalize progress report format & consultant shall prepare weekly site progress/ monthly progress reports so as to reach OWNER at the end of the month (to reach OWNER by 28th of each month positively) so that the same can be forwarded to respective monitoring departments by 1st of corresponding month
- (VI) Functional Schedules: The Contractor should prepare detailed functional schedules in line with network for functional monitoring and control, L-1 to L-4 schedules,

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Project turnaround document, S curves, EV analysis and submit scheduled progress curves for each function viz. MR, Ordering, delivery and construction supervision.

(VII) Project Review Meetings: The Contractor shall present the programme and status at various review meetings as required.

(VIII) Progress Reports: Monthly Progress Report

The report shall be submitted on a monthly basis within ten calendar days from cut-off date as agreed upon, covering overall scenario of the work. The report shall include but not be limited, to the following:

- (a) Brief introduction of the work.
- (b) Activities executed/ achievements during the month.
- (c) Scheduled v/s actual percentage, progress and progress curves for scope finalization, ordering, delivery, construction, overall and quantum-wise status of job progress against scheduled.
- (d) Areas of concern/ problem/ hold ups, impact and action plans.
- (e) Resources deployment status.

(IX) Material Status Report

(X) Project Risk Register with mitigation plan

(XI) Prepare typical formats for documents required for monitoring and progress reing viz., drawing schedules, MR schedules, procurement status, inspection status and construction status etc.

(XII) Develop co-ordination procedure to establish formal lines of communication between OWNER and CONSULTANT.

(XIII) Prepare activity list & develop an overall network for the monitoring of the project and information system in consultation with the Owner.

(XIV) Monitor and review the project progress and expenditure against approved estimate and draw projected fund requirements on quarterly basis.

(XV) Progress Monitoring on Arc GIS:

- (a) The Physical and Financial progress monitoring is also required to be monitored by the EPCM in Arc GIS apart from other monitoring tools mentioned elsewhere in bidding document.

(XVI) The data for daily progress will be entered by individual contractor at BPCL's server. The EPCM consultant will verify the data in the software and the data will be published only after approval of the EPCM consultant. Consultant to capture all day to day construction related data / reports online seamlessly through pipeline laying

contractors on daily basis. Necessary hardware / software including training shall be provided by the owner.

(XVII) Daily progress data for each package will be entered by respective contractor and it will be approved by PMC / Owner and further it will project dashboard for management review purpose.

(a)

(b) Necessary training to site contractor and EPCM consultant for working on software will be provided by BPCL free of cost.

(c) Necessary access for data entry and verification of data in the software will be extended to authorized representative of EPCM consultant and site contractor.

(d) All as built documents and drawings and AFC drawings will be uploaded by the EPCM consultant in the Arc GIS software.

5.4.6 PROJECT RISK MANAGEMENT:

The scope for Project risk management is as detailed below:

PMC shall identify the various risks involved in successful completion of the project along with its mitigation plan at the beginning of the project and maintain a project risk register. The risk register shall be continuously updated and shall form a part of monthly progress report.

The consultant should set up a Project Risk Management cell and the scope shall primarily include the following Risk Management process, Risk Assessment on an ongoing basis:

- a) Understanding of ISO 31000 on Risk Management; COSO ERM Framework and IRM Risk Management Process
- b) Risk Identification
- c) Risk Quantification both on Quantitative and Qualitative planes.
- d) Risk Response Development
- e) Risk Response Control and Risk Closeout Report
- f) Residual Risk Reporting
- g) Monitoring and Review of Risk Management Process.

The process of project risk management is to be adopted continuously for the entire project life cycle.

The Project Risk Management shall be headed by competent who have acquired Certificate in Project Risk Management (Crt PRM) from competent national institute.

The project manager heading the project along with some of his key project team members should have Certification in Project Management (CIPM) from PMA, India, the national, not for profit society.

5.4.7 STATUTORY APPROVALS:

In principle approvals from statutory authorities shall be arranged by OWNER. The terms and conditions put forth by various authorities shall also be provided to CONSULTANT. Preparation of construction drawings for obtaining necessary approvals from statutory authorities shall be the responsibility of CONSULTANT.

Although all NOC's shall be arranged by OWNER, CONSULTANT shall also render necessary assistance/ support to OWNER to obtain license, approvals, clearances, permit etc. as and when necessary. Maintaining all statutory books, site records/res in line with statutory agencies requirement such as CTE/ CVC/ PNGRB etc.

5.4.8 LAND REQUIREMENT FOR PROJECT:

Consultant shall examine the total land requirement for putting up project facilities & also examines land being procured by BPCL for this purpose. Any additional land if required shall be advised by consultant to BPCL within two months of award of contract for necessary/ timely procurement actions

6.0 OBLIGATIONS OF OWNER:

OWNER shall be responsible for providing/ arranging the following information, services and assistance at no cost to CONSULTANT:

- (I) All in principle clearances/ NOC's from Govt. Dept. / authorities & statutory bodies. However all necessary assistance/drawings/details as sought by owner shall be provided by consultant.
- (II) OWNER shall provide the approval to the tender packages within 15 days of receipt from CONSULTANT. Approval of OWNER on all other documents submitted for OWNER's approval shall be given within 15 days.
- (III) Land acquisition at Intermediate Pigging cum pumping station and SV stations and making ROU available along the pipeline route.
- (IV) The artwork for Press Advertisement if any shall be prepared by the consultant and the same shall be forwarded to Owner for necessary publication in leading newspaper. The News Paper advertisement of NITs is Owners responsibility if any.
- (V) NIT for Open tender shall be provided by Consultant on procurement website of BPCL. The publication of all NIT's/ Tenders shall be done through BPCL's E-tender al only (<https://bpcleproc.in>) without any extra cost to the consultant. Necessary access to the E-tender al of BPCL shall be provided to the consultant.
- (VI) Permanent power connection for the project from state authorities shall be secured by OWNER. However, necessary technical assistance for liaisoning with state authorities for making power available within battery limits and for identifying the location at which these facilities shall be received have to be provided by CONSULTANT.

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(VII) Camp Office facilities have to be arranged by the consultant for its site staff at their own cost. Necessary arrangement of Lodging, boarding and transportation of its site staff have to be made by the consultant at their own cost. The offices to be established at Coimbatore, Sankari, Dharmapuri, Devangonthi. This is minimum requirement, however consultant may establish additional camp offices based on the project requirement.

BPCL shall provide only open space for their office inside plant at Irugur and Devangonthi and consultant shall establish their own office / office infrastructure etc. at their cost.

(VIII) Dedicated Transportation facilities have to be arranged by the consultant for its site staff at their own cost.

(IX) OWNER shall make available following documents to CONSULTANT to review and adopt:

- (a) Relevant extracts of Feasibility Re/ EIA Re/ RRA Re.
- (b) Product specifications.
- (c) Relevant extracts and conditions of statutory approvals
- (d) Detailed route/Engg. Survey report.
- (e) Soil investigation report of Pipeline route
- (f) Plot details (options) of Proposed New Pumping station at Irugur (Coimbatore) /IP Station/ SV Stations/ Bangalore RT/ Sankari TOP.
- (g) Parameters for design of Administration and staff facilities

(X) Arrange marine-cum-storage-cum-erection insurance including transit risk insurance for total works and EQUIPMENYS. To deal with insurance agencies for settlement of claims, Necessary assistance shall be provided by consultant.

(XI) Act as principal employer and deal with all state/ Local Govt. regulations, Labour Commissioner, Central Govt., Statutory authorities and Govt. Auditors.

(XII) Visits made by Consultant in connection with the discussions with statutory/government/ local authorities as well as with other Oil companies, the expenses shall be reimbursed on actual on production of receipts of the same.

(XIII) Carry out selection of spare parts for the plant and procurement of oil, grease, lubes, chemicals, consumable etc. required for commissioning.

(XIV) CONSULTANT will give details and brand name of the lube/ grease/ chemicals/ consumables etc. in advance for OWNER to procure the same.

(XV) Wherever mandatory spares to be ordered with main equipment the same shall be identified by CONSULTANT and consent of OWNER will be obtained. Maintenance spares for 2 years operation will be selected by OWNER.

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- (XVI) Since the system wise commissioning of the project is envisaged progressively between 2 to 3 months after mechanical completion, OWNER will arrange the required inputs, men and operating personal and take over the facilities, system, plant/ unit wise within the period of 2 to 3 months mentioned above. However necessary commissioning assistance with all required manpower during commissioning shall be provided by EPCM

SPECIAL CONDITIONS OF CONTRACT (SCC)

SPECIAL CONDITIONS OF CONTRACT (SCC)

- 1.1 Highest standards of safety shall be maintained in design, engineering, construction at site and all safety precautions and regulations should be strictly adhered to. Compliance to OISD guidelines/ PNGRB Std. T4S/Any other statutory/Regulatory body etc.
- 1.2 When the party signing the agreement is not the sole proprietor, the necessary Power of attorney authorizing the person who is acting on behalf of the proprietor should be produced before execution of the Agreement.
- 1.3 The Consultant shall have to quote for SOR items as per following:
- (a) Item 10 of SOR: Office Works (Part-A): Lump sum (LS) price considering complete scope of office work for Carrying out basic engineering. Job also includes carrying out & finalization of Basic Engineering documents/HAZOP/SIL/Surge Re/P&IDs as applicable considering, TOP at Sankari, SV and IP stations latest revised standards/ guidelines and acceptance by owner. The optimization study shall be carried out considering the present and future requirements/throughput. Refer complete scope of work mentioned in the tender
 - (b) Item 20 of SOR: Office Works (Part-B): Lump sum (LS) price considering complete scope of office work from detailed engineering till award of job and issue of PO/ LOA for procurement of identified items, works & services, placement of PO/ DLOA, inspection of indigenously procured materials to commissioning, Carrying out Residual Engineering, Pre & post commissioning assistance, Contract closures, Project closure re, assistance during Arbitration proceedings (if any), Support to BPCL in formulation of reply to CTE/ CVC/any other statutory queries etc. Refer complete scope of work mentioned in the tender
 - (c) Item number 30, 40, 50, 60 of SOR: (Part-C): Manmonth rate site work for category of manpower deployed.
However total price of all manmonth price considering complete scope of construction activities, Material Store Management, Pre Commissioning, commissioning, post commissioning assistance, Assistance during Arbitration proceedings (if any). Refer complete scope of work mentioned in the tender
 - (d) Item 70 of SOR: Man-Hour rates for additional Office Work
 - (e) Item 80 of SOR: Man-Days price for Inspection Charges for Owner supplied materials, inspections in foreign countries.

However, travel charges for foreign inspections (to and fro economy class air fare) shall be reimbursed by BPCL on submission of air tickets/Boarding pass etc. duly approved by Finance Dept. of EPCM vendor.

NOTES:

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- (i) These rates shall be valid during entire contract period. The payment will be made as per the mile stones given under payment term of the tender.
 - (ii) Bidder has to provide following as a backup of Quoted rates in attached format along with technical bid:
 - a. Man Hour Qty. for Part-A&B separately: office work
- 1.4 No extra payment shall be made on account of delay due to poor performance of vendors/ contractors as the contract management is the sole responsibility of PMC.
- 1.5 OWNER reserves the right to revise the finalized & approved specifications, drawings and designs at any stage of work. Such deviations shall be adjusted at additional man-hourly/ man-month rate available in the contract.
- 1.6 In case Consultant is required to execute certain extra activities not envisaged in the original scope of work, then Consultant shall submit to EIC of BPCL, the detailed scope of work along with estimated man- hours/Man months as applicable. Man-hours/Man months as applicable for extra time schedule shall be mutually agreed between BPCL & Consultant before commencement of the work and shall be paid at the rate of man-hour/ man-month rates specified in the SOR for extra work. These Man hour rates for additional office job & Man-month rate for additional site work shall be valid during entire contract period.
- 1.7 **Office Work and Site Work: PMC shall submit the Office manpower deployment plan and site manpower** deployment plan with mobilization schedule along with their bid as mentioned in clause C of Project Scope of work in “Details of Work”.
- 1.8 **CONTRACT PERFORMANCE GUARANTEE/ SECURITY DEPOSIT:**
After placement of LOA by BPCL, the successful bidder shall furnish a contract performance bank guarantee as per tender condition within 15 days of LOA. The Security Deposit may be furnished in the form of Accountant Payee Demand Draft payable to BPCL or Bank Guarantee in the prescribed format. The BG shall be from any Indian Scheduled Bank or an International Bank of repute having a branch in India or a corresponding banking relationship with an Indian Scheduled Bank.
- Vendor to note that this PBG initially shall be valid for 44 months {32 Months Contract Period +12 months defect liability period} from LOA of part A or months (21 Months Contract Period +12 months defect liability period) from LOA of Part C whichever is later with additional 12 months claim period.
- In the event of any arbitration proceedings, the EPCM shall submit a separate BG for an amount of 1% of basic contract value at the end of the defect liability period which shall be valid for the further period of 2 years for arbitration support, without any additional charges.
- 1.9 **PAYMENT SCHEDULE FOR PIPELINE AND ALLIED WORKS:**

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Payment shall be made to successful Bidder against milestones completion/ progress. Typical milestone guidelines are given below.

Bidders are advised to adhere to the following milestones. The bidder shall relate these milestones to detailed network of the project.

Milestones for Payment to Consultant:

1.10.1 Office Work: Part-A Based on progress of work as follows:

- I. 25% on finalization of pipeline optimization studies and fix up pipeline size as per throughput completion given by BPCL for Phase I, II and III and completion of studies required for designing / engineering of P/L mainly detailed route survey, alignment sheets, Cadastral survey, Soil investigation, Soil Resistivity.
- II. 25% on finalization of Process design package consisting of design basis, carrying out optimization studies for the entire pipeline, review / update layout of facilities, PFDs, P&IDs, process / equipment data sheets, electrical / instrumentation data sheets etc., Electrical load list, equipment / material specification including pipeline external coating etc.
- III. 30% on finalization of Engineering Design basis for all disciplines and finalization of conceptual designs, telecommunication, Supervisory Control and Data Acquisition (SCADA) inclusive of leak detection systems and turnkey instrumentation.
- IV. 10% on finalization of Pipeline system operation and control philosophy.
- V. 9% on finalization and submission of HAZID, HAZOP, SIL Study and Surge Analysis and approval from Owner.
- VI. 1% on site visit and data collection and finalization philosophy / package combined CCKPL and IDPL for integrated packages and integration with exiting terminal on the pipeline.

1.10.2 Office work: Part –B Based on progress of work as follows:

- I. **1% on completion of**
 - o Review of EIA/RRA res for detailed Engg.
 - o Submission & finalization of Project execution methodology
 - o Adoption of Purchase/Tendering procedure of BPCL & finalization for this project.
- II. **25% Payment** on floating of RFQ/ MRs for procurement package and approval from Owner (further break up request depending upon number of procurement packages) as per the following:
 - a) Approved MR of Line Pipe - 2%
 - b) Floating of RFQ for line pipe– 3%
 - c) Line Materials (IJ/ Flow Tees, Scraper Launcher/ Receiver/ Flow Meters/ Basket filters etc.) - 2%
 - d) Mainline Line & Booster Pumps: - 4%
 - e) Balance Rotating Equipment's (DG sets, slop/sump Pumps, CI Dosing Pumps etc) - 1%
 - f) Station Piping Materials (Valves, Pipes etc) - 3%
 - g) HV Packages (Breakers, Transformer, HT Capacitor Banks,) - 2%
 - h) MV Packages (MV Boards, UPS, Battery charger, Solar Power Plants etc) - 3%
 - i) SCADA, Telecom & Instrumentation Packages, control Valves, PCMS/PITS– 5%.

- III. **25% Payment** on floating of RFQ, Scope & Tender documents for following works packages (Further break up request depending upon the number of work packages as per the following:
- (a) Pipeline Laying Tender – 10%
 - (b) HDD Tender – 3%
 - (c) Civil Work for stations & enabling works if any - 5%
 - (d) Composite Mechanical/ Electrical/ Instrumentation for Despatch/receipt/ Intermediate pigging and SV station – 6%
 - (e) EGP for Entire P/L - 1%
- IV. **14% on receipts of bids/ evaluation/ recommendation for award/ LOI/ Detailed PO/PR/ DLOA of all Tenders** (Further break-up requested depending upon number of procurement packages).
- V. **8 % on preparation & submission of approved for construction drawings (AFC), approval of all vendor drawing for direct procurement items & vendor drawing for contractor scope of works (including procurement and works).**
- (a) Issue of AFC drawing : 2%
 - (b) Approval of vendor drawing for direct procurement items : 2%
 - (c) Approval of drawing / documents for SCADA, Instrumentation & Telecomm, PCMS/PIDS : 2%
 - (d) Approval of drawing / documents Balance works packages : 2%
- Further payment break up for the above can be decided mutually after placement of order.
- VI. **7 % on receipt of materials at site with relevant operational / maintenance manuals as per the following break up :**
- Coated pipe at dump site - 1%
 - Mainline/ Booster Pumps - 1%
 - Balance Rotating equipment's - 0.5%
 - Telecom package - 0.5%
 - SCADA & APPS - 0.5%
 - Instrumentation Package - 0.5%
 - HV Package - 0.5%
 - MV Package - 0.5%
 - Station Piping, Line materials, including all type of Valves, fitting, flanges, Filtration & Metering equipment's –2%
- VII. 5 % on submission of AS-BUILT drawings against AFC issued by consultants & compilation/submission of as built drawings by all vendors, final documents of all packages submitted by all vendors
- VIII. 5 % on successful mechanical completion of the project

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- IX. 5 % on successful commissioning of the project
- X. 3 % after completion of SAT's, PCP Surveys recommendations and successful handing over of packages
- XI. 2 % on receipt of Order closure res of all orders & Project closure report

1.10.3 Site work: Part-C for manpower deployed as follows:

Payment based on progress of work as follows:

- (a) 50% progressive payment on monthly rate of manpower deployed.
- (b) 10% upon 25% project progress for cumulative man-month till this period.
- (c) 5% upon 50% Project progress for cumulative man-month till this period
- (d) 10% upon 75% Project progress for cumulative man-month till this period
- (e) 5% upon 90% project progress for cumulative man-month till this period
- (f) 5% on Mechanical completion, for cumulative man-month till this period
- (g) 5% after completion of Pre commissioning checks including compliance of OISD check list points, for cumulative man-month till this period
- (h) 5% on successful commissioning of the project, for cumulative man-month till this period
- (i) 3% after completion of SAT's, PCP Surveys recommendations and successful handing over of packages, for cumulative man-month till this period
- (j) 2% on receipt of Order closure reports of all orders & Project closure reports, for cumulative man-month till this period.

1.11 COMPLETION PERIOD:

All the works of "EPMC Services for Irugur (Coimbatore)-Bangalore (Devangonathi) pipeline & existing CCKPL Pipeline with all associated works related to Irugur (Coimbatore) Dispatch terminal, Pigging Station, TOP Terminal, SV Stations and Devangonathi Receipt terminal" shall be as per the scope of work and schedule of quantities mentioned in the tender document and shall be completed as under:

Completion period break up for each part is tabulated below:

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DESCRIPTION	COMPLETION PERIOD
<p>Part-A (office works) Basic Engineering (consisting of Process Design Basis, Process design Package, all Engg. Design basis (Piping, Mechanical, Civil, Electrical, Instrumentation etc.) P&IDs, HAZOP, Pipeline optimization study, surge analysis etc. and acceptance from owner)</p>	<p>11 months from date of LOA of Part-A or from date of intimation of start of work by Engg In-Charge whichever is later.</p>
<p>Part B Detailed engineering, finalization of MR and tender package, floating of tender, evaluation, award and issue of LOA, Placement of PO/ DLOA. Residual engineering, Inspection & expediting (directly/ indirectly procured material) after award of the job till commissioning and all services required from PMC HQ during / post project completion.</p>	
<p>Part-C (Site works) Construction management Part C is comprised of four cadre wise manmonth rate of staff to be deployed as per plan.</p> <p>Scope of works for Part C involves, overall Project monitoring, construction supervision, mechanical completion, commissioning assistance, post commissioning Stabilization and closure of project. closure of project.</p>	<p>Mechanical Completion: 18 months from LOA of Part C or from date of intimation of start of work by Engg In-Charge whichever is later.</p> <p>Commissioning and closure: 3 months from mechanical completion</p>

NOTES:

- (i) All necessary Manpower, Infrastructure facilities, Vehicles etc. shall be maintained by consultant for their Site, Office etc. for successful completion of the project in all aspects.
- (ii) The scope of services will be for a period of 29 Months for Mechanical Completion & 32 months for commissioning respectively from date of LOA of Part-A&B or from date of intimation of start of work by Engg In-Charge whichever is later OR

18 months for mechanical completion & 21 months for commissioning from date of LOA or from date of intimation of start of work by Engg In-Charge whichever is later for Part C. Liquidated damages for delay shall be calculated considering these targets as per LD clause mentioned in SCC of tender.

Further making reply to queries including documents to various statutory bodies, Government body, Government Auditors, CTE, CVC etc (if any), Arbitration support (if any) for a period of 3 years, Post commissioning stabilization/Handing over is in scope of EPCM/consultant with no extra cost to owner.

1.12 RECOVERIES:

(I) LIQUIDATED DAMAGE FOR DELAY:

Consultant shall commence the work immediately on receiving the Letter of acceptance (LOA) from owner. The work will be progressed in accordance with the agreed schedule as enumerated in tender. Failing completion of the project as per agreed overall schedule, LD shall be levied by the owner @ 0.5% (half percent) of the total consultancy charges for every week of delay attributable to consultant, subject to a maximum of 5% (Five) of the total consultancy charges.

The Liquidated damage shall be applicable milestone wise. I.e. Mechanical completion & commissioning as under:

- If there is a delay in completion of Mechanical completion due to reasons attributable to consultant, then LD is applicable on 85% of Value {Part-A + Part B + Part C + total quoted charges for Inspection item} put together, excluding the value of Manpower supply for additional work.
- If there is a delay in commissioning due to reasons attributable to consultant, then LD is applicable on the 15% of value { Part-A + Part B + Part C + total quoted charges for Inspection item}put together, excluding the value of Manpower supply for additional work.

(II) BPCL reserves the right to invoke the CPBG of 1% obtained against arbitration services as per clause

1.16 of SCC, due to non –performance of assistance towards Arbitration (if any). If in case there are no arbitration cases post concluding of all contracts, the CPBG of 1% amount shall be returned to consultant.

(III) Recoveries on account of non-availability of the minimum Construction Manpower for cumulative absence of more than 15 days in 14 months construction period would be considered on pro-rata basis as per Man months quantities considered as a backup of LS Quoted rates for Part-C.

(IV) Recovery of two man-month charges (respective cadre) for Non-Deployment of staff shall be carried out from running invoice.

(V) Recovery of one man-month charges (respective cadre) shall be carried in case absence of staff for more than 4 days in a month.

(VI) Recoveries for non-availability/deployment of minimum manpower as mentioned above:

Note :

Separate Recovery shall be carried for delay and manpower deployment.

1.13 EXTENDED STAY:

However if consultant services extends beyond contractual completion date due to reasons attributable to BPCL, additional payments for services extended beyond CDD shall be paid based on the quoted man-month / man-hour rates for manpower (Item no. 30 & 40s of BOQ). The quoted rates of item no 30 & 40 will be valid for period of 48 months from the date of LOA of part A.

If the consultant is required to perform beyond the contractual completion period due to poor performance of any contractor/ vendor no compensation shall be paid to the consultant for the extended stay solely attributable to the above.

OTHER TERMS AND CONDITIONS

The following expressions here under and elsewhere in the Tender documents used shall have the following meanings unless otherwise specified.

ARTICLE-1 DEFINITIONS

Except as otherwise expressly provided or unless the context otherwise requires, in this Contract, the following terms shall have the meanings set forth below:

1. "Acceptance of the Work" shall mean acceptance by OWNER of the Work.
2. "Approval/NOC" means approval in writing by an authorised signatory of OWNER or Consultant (as the case may be), and "approve" or "approved" shall be construed accordingly. Shall also include permissions issued by THE OWNER/ any other Govt. / private agencies as required for execution of the project.
3. "Contract Price "means the lump sum fixed price payable by OWNER to Consultant in consideration of performing the work, in accordance with the terms, conditions and provisions of this Contract".
4. "Design Information" means any designs, drawings, technical data, res, surveys or other documents or other written information of any kind supplied by OWNER to Consultant, or to which Consultant is referred by OWNER, whether or not prepared by or on behalf of OWNER.
5. "Key Personnel" mean individuals who are considered by OWNER to be critical to the completion of the consultancy Work in accordance with this Contract and notified by OWNER to Consultant as being key personnel.
6. "Labour/ labour" means Consultant's Manpower.
7. "Materials" means drawings, documents, res, outputs on hard drives etc. to be furnished in connection with the performance of the Work.
8. "Milestone" means the milestone to be achieved by a specified Date or within a specified period.
9. "Milestone Value" means in respect of any Milestone that part of the Contract Price payable in respect of completion of that Milestone.
10. "Parties" shall mean OWNER and Consultant, and "Party" shall mean either of the parties.
11. "Person" means any person, firm, corporation or other legal entity whether incorporated or unincorporated.
12. "Project Co-ordinator" shall mean Consultant shall appoint, subject to OWNER's prior written

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approval, a fully qualified, experienced and competent project Co-ordinator who shall have complete and entire responsibility for executing all work to OWNER's satisfaction.

13. "Progress Schedule" shall mean the time schedule of progress of work.
14. "Zero date" The Zero date for the contract shall be considered as date of receipt of LOA or date of intimation to start the work by Owner whichever is later for the purpose of Contract.
15. "Remuneration" shall mean charges payable to the successful bidder in lieu of services provided under the scope of this contract.
16. "Scope of Work" means the all activities to be undertaken by Consultant.
17. "Site" shall means Irugur (Coimbatore) Terminal, Irugur (Coimbatore) to Bangalore (Devangonathi) pipeline route, proposed receipt terminal at Bangalore (Devangonathi) and proposed S.V stations/C.P stations/Pigging cum pumping stations along the route.
18. "Consultant/EPCM" means the successful bidder to whom job has been awarded for performance of this tender.
19. "Work" means the engineering and design services and Project Management Services till commissioning, more fully described in the Scope of Work to be provided in accordance with this Contract, all necessary work and services to be performed by Consultant to satisfy its obligations under this Contract.
20. "Work Value" means immediately upon notice of termination of this Contract by either Party, the Parties shall consult with one another in order to agree on the percentage of Work completed up to the date of termination. It is understood that resolution of disagreement, if any, in arriving at completed work value will be a matter of arbitration.
21. IDPL (Irugur Devangonathi Pipeline) and CBPL (Coimbatore Bangalore Pipeline) are interchangeably used.

INTERPRETATION

1. All headings of the Clauses in Other Terms and Conditions are intended solely for the purpose of giving a broad indication of the contents of the clause and not as a summary of the contents thereof.
2. The total scope of work mentioned in minimum requirement, however consultant to augment / deploy resources as per project requirement to meet overall project objective.
3. Unless otherwise specifically stated, a masculine gender shall include the feminine and neutral gender and vice versa and the singular shall include the plural and vice versa.
4. The word "SHALL" used in this tender document indicates mandatory requirement.

Subject to any express provision to the contrary contained elsewhere in this Contract, any period

of time fixed by this Contract or determined pursuant to this Contract for doing any act or thing shall be reckoned in accordance with the following provisions:

- (a) The usual non-working days of the week and public holidays in India shall be included in any such period of time;
- (b) “month” shall mean a calendar month;
- (c) Where the act or thing is required to be done within a specified period after or from a specified Date, the period shall begin immediately after that Date;
- (d) Where the act or thing is required to be done within or in not more than a specified period before a specified Date, the period shall end immediately before that Date.

Wherever in this Contract provision is made for the giving or issue of any notice, consent, approval, certificate, instruction, request, or determination by any Person, unless otherwise specified, such notice, consent, approval, certificate, instruction, request, or determination shall be in writing and the words “notify”, “certify”, “instruct”, “request” or “determine” shall be construed accordingly.

ARTICLE-2

CONSULTANT’S WORK AND RESPONSIBILITIES

WORK: Consultant shall perform the work as scope defined in this tender.

Additional responsibilities except as may otherwise be specifically provided in this Contract, Consultant shall be responsible for providing managerial, design and engineering services and labour (Consultant’s manpower) and all materials (documents, drawings, res, output on floppies, etc.), stores management and any other items required to perform its Scope of Work.

1. Special Requirements: Consultant shall comply with the quality assurance requirements, the health, safety and environmental requirements.
2. Information as to Local Law: Consultant will be responsible for obtaining all information relating to laws, regulations and ordinances, including safety regulations, applicable to the performance of Consultant’s obligations hereunder.
3. Permits and Licenses: Consultant will provide all technical and managerial assistance needed/sought by OWNER to obtain and maintain any registrations, licenses (including im licenses, if any, for the Work), and permits which are required by any applicable Indian laws or regulations and which are required to be in the name of OWNER or its employees or agents.

ARTICLE-3 SCHEDULE OF WORK

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1. Commencement of Work: Consultant shall commence the work pursuant to award of contract”. The Consultant shall perform its obligations pursuant to this Contract in accordance with Schedule of Work. Time is the essence and Consultant recognizes the imance to OWNER of the completion of the Work in accordance with the Schedule of Work. The Zero date for the project shall be considered as date of receipt of LOA or the date of start intimated to successful consultant during the kick off meeting for the purpose of Contract.
2. Work Program: Within 7 days from date of intimation to start the work, Consultant shall commence work and shall submit to OWNER for approval a detailed programme showing how Consultant proposes to perform the Work in accordance with the Schedule of Work.

BPCL shall provide the following documents to the consultant as per schedule given below,

- (a) Route survey & soil investigation/ resistivity data within first week from "zero date.
- (b) Priority of Work: Consultant shall give the Work the due priority and shall not make any allocation of its resources which would have the effect of delaying the timely performance of the Work.

ARTICLE-4

4.1 Standards of Performance:

In performing the Work, Consultant shall conform in all respects to the standards of performance hereinafter set forth.

- 4.1.1 Professional Performance: Consultant shall perform the Work in a professional manner, using sound good engineering and design principles and management and supervisory procedures, and in accordance with the highest standards of care employed by leading engineering firms. Consultant represents that it has the required skills and capacity to perform the work in the foregoing manner.
- 4.1.2 Management, Design and Engineering: Consultant shall perform the work to conform with the requirements of this contract, including without limitation, the Scope of Work.

Documents, Drawings and Manuals. Consultant shall submit to OWNER for comments/review and perusal, within the time periods specified or within agreed periods, such documents, write-ups, designs, drawings, models and manuals as may be specified in the contract.

4.2 Provision of Services:

- 4.2.1 General: Except for items required to be provided by OWNER pursuant to this contract, Consultant shall provide all Materials, services of others, supplies and utilities, required for the design and performance of the work.
- 4.2.2 Compliance with Codes and Standards: Consultant agrees that the work and all systems, components and parts of the work shall comply with;

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- (i) Those design criteria, codes and standards which are specified in the contract and
- (ii) The requirements of all relevant Indian authorities, including without limitation to:
 - (a) Factories Act;
 - (b) Indian Petroleum Rules;
 - (c) Tariff Advisory Committee Guidelines;
 - (d) India Electricity Rules;
 - (e) Requirement of Chief Controller of Explosives
 - (f) Requirements of local bodies and statutory agencies etc.
 - (g) OISD standards/PNGRB Stds/Codal requirements.
 - (h) NACE standards for cathodic protection
 - (i) Any other requirements

Consultant also agrees that all design criteria, codes and standards included in this Contract are and at all times prior to the Acceptance of the Work will be in compliance with the requirements of such authorities.

Any modification to agreed design criteria will be subject to Consultant providing detailed justification and OWNER's approval of the same.

4.3 Conduct of Work:

- 4.3.1 **Manufacturing Procedures:** Consultant shall perform, design and develop the Work in accordance with the latest practicable techniques and innovations consistent with the management, engineering and design of the Work and the Schedule of Work. Consultant shall also perform the management, design and development to incorporate, consistent with the Schedule of Work, experience gained in the course of designing, developing and managing other similar work designed, developed and managed by Consultant.
- 4.3.2 **Compliance with Applicable Laws and Regulations:** Consultant shall abide by all applicable laws, regulations and ordinances of all governmental authorities including local bodies issuing NOCs and of the administrative subdivisions thereof applicable to this Contract and the performance by Consultant of the Work in any jurisdiction and by all rules and regulations of those Persons and entities having control or jurisdiction over the Work. Consultant represents that is it fully aware of all of the legal requirements, business practices and rules and regulations which must be followed when performing the Work. Consultant shall furnish to OWNER, promptly upon request, such information concerning Consultant, its Subcontractors and their respective employees, servants and agents as OWNER may be required to furnish to any applicable governmental agencies or authorities.

ARTICLE-5

5.1 Owner's Responsibilities

- 5.1.1 **Owner's Representative:** Upon execution of this Contract, OWNER shall designate a representative ("OWNER's Representative") who shall be appointed to represent OWNER under this Contract and notice given to and received from OWNER's Representative shall

have the same effect as if given to or received from OWNER. OWNER shall notify Consultant of the designation of the OWNER's Representative by delivering to Consultant a letter naming such person or any replacement. Except as expressly stated in this Contract, the OWNER's Representative shall have no authority to relieve the Consultant of any of its duties, obligations, liabilities or responsibilities under this Contract.

- 5.1.2 Approvals: OWNER shall expeditiously review and pursue documents, drawings, specifications, proposals and requests submitted by Consultant pursuant to this contract. Except as expressly otherwise specified elsewhere in this Contract, OWNER shall respond promptly of receipt of any such submission, in the case of submissions requiring action by governmental agencies or committees, and within 7 days of receipt of any such submission, in the case of submissions requiring action by OWNER only. In case no written advice, comment or instruction is received by Consultant within such periods, or within any periods for review and perusal stated elsewhere in this Contract, each submission for review/comments shall be considered approved; and Consultant shall inform the OWNER of the same in writing.

ARTICLE-6 PAYMENT

6.1 Payment of Contract Price:

The Contract Price shall become payable by OWNER in accordance with the following provisions of this Article.

6.1.1 Completion of and Payment for Work Subject to Milestones.

6.1.1.1 Milestones: Details of the Milestones and the percentage of payment to be released on completion of such milestones as mentioned in SCC.

6.1.1.2 Contents of the Certificate: The certificate to be issued by Consultant in respect of each Milestone shall:

- a) Identify the Milestone, with reference to the Schedule of Work.
- b) Include a statement as to whether the Milestone was properly achieved in accordance with the Schedule of Work.
- c) Specify the Milestone Value claimed.

6.1.1.3 Payment: Consultant shall be entitled to payment for each Milestone properly certified as complete and confirmed by OWNER as achieved in accordance with this Contract as follows:

- (a) OWNER shall pay to Consultant as per Payment Schedule, in respect of such Milestones as are properly certified as complete by Consultant in respect of each Milestone so certified and confirmed by OWNER, within 15/30 days of receipt of invoice thereof by OWNER.
- (b) No additional payment shall be made for any Milestone achieved in advance of the date fixed or period specified thereof in the Schedule of Work.

6.2 Additional Costs:

6.2.1 Additional Costs: Consultant shall not be entitled to any adjustment of the Contract Price to be paid except for any supplemental agreement in writing between OWNER and Consultant providing that any further costs should be paid to the Consultant.

6.2.2 Calculation of Cost: Such costs wherever required shall be calculated by reference to the break-up of prices and/or unit rates contained in Price Bid or if in OWNER's opinion there is no applicable price, on the basis of actual cost to Consultant, provided Consultant gives adequate supporting data on actual cost to OWNER's satisfaction.

6.3 General Terms of Payment:

6.3.1 Accounts: All payments by OWNER to Consultant, shall be made through NEFT.

6.3.2 Effect of Payment: The making of any payment shall in no event constitute the acceptance by OWNER of any Work performed by Consultant pursuant to this Contract.

ARTICLE-7 CHANGES

7.1 Changes:

Consultant agrees to effect such changes in the Work as OWNER may from time to time request. Any request by OWNER for a change shall be delivered to Consultant in writing for Consultant to prepare a preliminary change order. Throughout the performance of the Work, Consultant shall have a continuing obligation to propose to OWNER for OWNER's consideration:

- (a) All such changes as Consultant considers desirable including, any change which in the Consultant's opinion will reduce the cost of the Work, or improve the efficiency or value to OWNER, or may otherwise be of benefit to OWNER, and
- (b) Such other changes known to Consultant as may be necessary to incorporate significant new developments in technology which are applicable or appropriate to the Work.
- (c) Consultant shall submit any such proposal in the form of a preliminary change order.

7.2 Preliminary Change Orders:

Upon receipt of OWNER's request for a change, Consultant shall prepare a preliminary change order and furnish the same to OWNER within a reasonable period of time following receipt of such request. Each preliminary change order submitted by Consultant to OWNER, shall be in writing and be accompanied by such information and data as will be reasonably required by OWNER to evaluate properly the proposed execution of the work in question, the effect on the Scope of Work, the Schedule of Work, Consultant's standards of performance, the Engineering Design, the technical soundness of the Work, the other undertakings by Consultant and the warranties contained in this Contract and the effect on the Contract Price, if any. OWNER shall reject or approve each preliminary

change order as expeditiously as proper consideration of the nature of the change may reasonably and data required to accompany the preliminary change order involved and for any additional analytical or investigative work requested by OWNER in connection therewith is deemed to be included in the Contract Price.

7.3 Variations in Price:

Except as otherwise provided in this Contract, any increase in costs resulting from any change shall be for the account of OWNER, provided that no cost adjustment shall be granted with respect to a change if:

- (a) The provision of the additional work or services is necessary in order for Consultant to satisfy its responsibility to make the Work comply with this Contract,
- (b) The additional work or services are required because of delays in the Schedule of Work attributable to Consultant, to late deliveries of materials or services or to labour shortages of consultant.
- (c) The additional work or services are required because of a breach of Consultant's General Warranties or,
- (d) The change relates to re-performance of any of the Work because of Consultant's failure to follow the requirements of this Contract.

7.4 Non Allowable Changes:

The following shall not be considered under any circumstances as changes in the Work, or within or to the Scope of Work or the project management services or the engineering design, nor shall any of the following be taken into account when calculating the cost consequences of changes, nor shall any of the following of themselves be considered the basis for any adjustment:

- (a) Any escalation in the cost of the Work or Materials or labour therefore;
- (b) Any increase in manpower hourly rates; and/or
- (c) Currency fluctuations in respect of costs included within the Contract Price and/or.

In addition, a request by OWNER that Consultant perform services or provide work not specifically included within the Scope of Work will not be considered a request for a change in the Scope of Work, if it is mutually agreed that the services or work requested were intended to be within this Contract or necessary to make the Work comply with this Contract.

Consultant shall certify/settle bills for closing of contract, analyse & provide rate analysis/verification of new items and abnormal quantity variations, negotiation of rates in respect of upward variations beyond 25% and abnormal quantity variations for price approved by Owner.

ARTICLE-8

RIGHT TO INSPECT

8.1 Inspection and Examination:

All management, design, development, Material, Work and workmanship supplied by Consultant or for which Consultant is responsible, shall be subject during normal business hours to inspection, examination and testing by OWNER, OWNER's Representative, or OWNER's designated consultants and/or other representatives, at any and all times during

management, design and development and at any and all places where such management, design and development are carried on, provided such inspection, examination and testing shall, to the extent possible, be carried out in conjunction with Consultant's.

8.2 Rejection and Re-performance:

OWNER and its designated consultants and representatives shall have the right to reject any ion of the work which is defective, deficient, not within specifications or otherwise of inferior quality or faulty services and require its re-performance. Rejected and other defective or deficient management or work shall be satisfactorily redone. The costs associated with such re-performance shall be for the account of Consultant and not reimbursable. After completion of the necessary re-performance, the relevant Work shall be subject to further inspection and examination by OWNER and its designated consultants and representatives.

8.3 Consultant to Furnish Supplies and Services for Inspection:

Consultant shall furnish at each location where inspection and examination is carried out all reasonable facilities, assistance, labour and utilities necessary for the safe and convenient inspection of Work that may be required pursuant to this Contract. Consultant shall also furnish OWNER and OWNER's designated consultants and representatives with access to records of all inspections undertaken by Consultant. Tests shall be conducted in accordance with applicable provisions of this Contract or otherwise as required by OWNER.

8.4 Consequences of Inspection or Failure to Inspect:

The right of inspection and examination by OWNER and by its designated consultants and other representatives provided herein is intended solely for OWNER's benefit, it being understood that no exercise of or failure to exercise such right shall relieve Consultant of any of its obligations hereunder or prejudice any of OWNER's rights under this Contract.

ARTICLE-9

ACCEPTANCE PROCEDURE

9.1 Notice of Acceptance:

Consultant shall notify OWNER in writing when Consultant believes that it has completed the entire Scope of Work. Within 30 days after receipt of Consultant's notice of such completion of the Work, OWNER shall advise Consultant in writing of any portions of the Work which remain to be performed, through a checklist and Consultant shall thereupon complete such portions, as indicated in checklist and again notify OWNER in writing that Consultant confirms that the Work has been completed. OWNER shall issue a certificate of Acceptance of the Work (the "Certificate of Acceptance"), after the Work has been completed and accepted, and dated to reflect the actual date of Acceptance of the Work.

9.2 Conditions:

The issue of the Certificate of Acceptance shall be conditional upon:

- (a) Legally effective releases, executed by Consultant, and any persons claiming by,

through, under or against Consultant who might have an interest in the Work or part adverse to OWNER, of all claims and liens against OWNER arising under or by virtue of this Contract, except such claims and liens, if any, in such stated amounts which Consultant, with the written consent of OWNER, may exclude from operation of such releases; and

- (b) Consultant's written declaration, together with such supporting documents as OWNER may reasonably require, that all claims and demands against, and debts incurred by Consultant, in respect of this Contract, have been settled, except claims excluded with the consent of OWNER from the releases referred to in the foregoing clause, and all taxes due and payable by Consultant have been paid or otherwise provided for.

9.3 Discretion of OWNER:

Notwithstanding the foregoing, OWNER, in its sole discretion, may accept the Work at any time and issue a Certificate of Acceptance even if, after corrective measures have been taken by Consultant, the Work as a whole does not satisfy the requirements of this Contract. Such acceptance and such notice shall not relieve Consultant of its obligations under this Contract.

ARTICLE-10

WARRANTIES & GUARANTEES

10.1 General Warranties:

Consultant warrants that:

- 10.1.1 **Personnel:** All professional personnel of Consultant shall have proper qualifications for the Work assigned to them hereunder.
- 10.1.2 **Standard of Care and Work:** Consultant shall perform their obligations under this Contract in conformity with the highest standards of care employed by leading engineering firms in the petroleum refining industry and all Work shall be first class.
- 10.1.3 **Management, Design and Development:** The management, design and development of the Work shall conform to this Contract and shall be free of defects and deficiencies. The management, design and development shall be such that the Work shall comply with the terms of this Contract and shall meet all design, safety and performance and other criteria as specified herein.
- 10.1.4 **Work:** The Work shall be fit for the purposes and uses intended and capable of use in the manner contemplated in this Contract.
- 10.1.5 **Other Services:** All Work performed by Consultant, including, without limitation, inspections performed by Consultant under this Contract, shall be adequate and sufficient for the purposes intended, in conformity with the terms of this Contract and free of defects and deficiencies.

10.2 Remediation:

- 10.2.1 Notice: At any time OWNER may by notice in writing to Consultant, require Consultant to remedy any defect in the Work by re-performance not later than 16 months from date of mechanical completion or 12 months from the date of commissioning, whichever is earlier.
- 10.2.2 Obligation to Remedy Breach: Consultant shall be obligated to effect, at its own expense, in the shortest practicable time, such re-performance of Work as are necessary to remedy such defect. Consultant's obligation to remedy any defects shall expire 16 months after mechanical completion or 12 months after commissioning, whichever is earlier. In case of any defect or deficiency in the Work which has not resulted from a failure by Consultant to perform its such defect or deficiency and shall be entitled to reimbursement of the costs associated with the correction thereof. The amount of such costs shall be agreed between the Parties, or in the absence of agreement, decided by the OWNER, and reimbursed.
- 10.2.3 Program for Re-performance: As soon as practicable, and in any event within 5 days after the receipt by Consultant of OWNER's notice, Consultant will submit for OWNER's approval a plan for effecting the re- performance required to remedy such defect. If required by OWNER, Consultant shall attend at the Site specified by the OWNER to inspect the defective Work and where appropriate carry out re-performance.
- 10.2.4 OWNER's Recourse: If Consultant does not begin its plan for re-performance within the time mutually agreed, or if Consultant and OWNER fail to reach agreement on such a program within 15 days of the receipt by OWNER of Consultant's plan submitted, OWNER, after advising Consultant in writing, shall be entitled at its option and at Consultant's expense to perform or have third parties perform such work as is necessary to remedy or cause to be remedied such defect. Reasonableness of the expenses as aforesaid shall be judged in relation to the expenses that Consultant would have incurred at the time of said re- performance of Work.
- 10.2.5 Other Rights and Remedies: The rights and remedies of OWNER provided are in addition to any other rights and remedies provided at law.

10.3 Completion Warranty

- 10.3.1 Project Completion Warranty: Consultant shall commence the work immediately on receiving written instruction to that effect. The work will be progressed in accordance with the agreed schedule as enumerated in SCC. Failing completion of the project as per agreed overall schedule, LD shall be levied as per LD clause in SCC of this tender.
- 10.3.2 Extended stay: If consultant is required to perform for further period of up to three months (to be treated as grace period) beyond contractual period as mentioned in clause no. 4 of Instruction for bidders, For this purpose consultant may please refer extended stay clause in SCC of this tender.

10.3.3 Performance: Consultant shall be completely responsible for the performance of the contractors/vendors for whom consultant is the Engineer – in-Charge. Consultant shall be fully responsible for issuing approved documents such as drawings, design, layouts, P&ID, GAD's, foundation drawings etc as per scope of work.

10.4 Payments:

Any amount required to be paid by Consultant may be deducted by OWNER from any amounts otherwise payable to Consultant.

ARTICLE –11

EFFECT OF APPROVALS, ACCEPTANCE AND PAYMENT

The obligations of Consultant hereunder shall not, except as expressly provided herein, be reduced or affected by any inspection, test, approval or payment, whether preliminary or final, or by the Certificate of Acceptance of the Work, it being agreed that the obligations of Consultant hereunder shall continue until fully satisfied or 16 months from the date of mechanical completion or 12 months from the date of commissioning, whichever is earlier.

ARTICLE-12 EXTENSIONS OF TIME

12.1 Extensions of Time:

12.1.1 Relevant Events: Consultant may apply to OWNER for an extension of time in respect of any Milestone or ion thereof, if any, if the following events occur (“Relevant Event”), which delay or prevent, or will delay or prevent, Consultant from achieving such Milestone by the time specified in the Schedule of Work:

- (a) A Change Order under
- (b) An Event of Force Majeure;
- (c) A notice of suspension served ;
- (d) Any delay, impediment or prevention by OWNER.

12.1.2 Certain Delays not Excused: Consultant shall not be entitled to any extension of time in respect of any delays caused directly or indirectly due to any event which is not expressly provided for as a Relevant Event.

12.1.3 Mitigation of Delay: Consultant shall use and continue to use its best endeavours to reschedule work activities to avoid or reduce the effects of any Relevant Event upon achievement of each Milestone.

12.1.4 Notice: If Consultant wishes to pursue a claim for an extension of time, Consultant shall, not later than 10 days after the commencement of the Relevant Event in respect of which the extension of time is claimed, give written notice (in addition to any other notice which may be required under this Contract) to OWNER, which:

- (a) gives full and detailed particulars of the cause of the delay;
- (b) specifies which of the Relevant Events listed above, Consultant considers to be applicable;
- (c) gives the date on which the Relevant Event relied upon commenced, and, if the Relevant Event has ceased, the date on which it ceased, or, if the Relevant Event is continuing, the expected duration; and
- (d) gives full and detailed particulars of:
 - (i) The effect of any delay to date and of any further delay which may reasonably be expected upon the Schedule of Work; and
 - (ii) The measures which Consultant has adopted to date and/or proposes to adopt or continue to adopt in order to minimise the effects of any delay to date and of any future delay.

12.1.5 Procedure: Upon receipt of a notice served, OWNER and Consultant shall endeavour to agree the period of extension of time in respect of the relevant Milestone(s), if any, to which Consultant is entitled and any necessary consequential adjustments to the Schedule of Work. Any such agreement shall be recorded in writing signed by OWNER and by Consultant.

ARTICLE-13

MANAGEMENT, KEY PERSONNEL AND PROJECT DIRECTOR

13.1.1 General:

Consultant shall provide, maintain and be responsible for all management during the performance of the Work. Consultant's procedures for managing, designing and developing the Work shall generally be those of Consultant, which are subject to review and/or approval by OWNER.

The pipeline activities shall be carried out in three (3) spreads. The spreads shall be enforced with additional manpower/ resources to cater to pipeline laying in forest areas, river crossing and difficult terrain enroute to accomplish the project schedule.

OWNER shall have the right, but not the obligation, to be represented at the Consultant's offices to liaise closely with Consultant's management during the performance of the Work. This representation may include appropriate management, technical, administrative and clerical personnel to review and/or approve Work performed by Consultant.

13.1.2 Key Personnel:

13.1.3 Consultant shall provide dedicated team as per Organogram proposed by them and accepted by the Owner for executing this Project. The details of key personnel and their Curriculum Vitae to be submitted along- with their bids. Proposed Organogram should reflect Project Manager as Project Incharge with RCM reing to him functionally.

13.1.4 OWNER may notify Consultant at any time that individuals filling positions described in the staff organisation plan are Key Personnel. Consultant shall procure (so far as in within its power), that Key Personnel shall be employed on or in relation to the Work full time until the issue of the Certificate of Acceptance of the Work. In the event that it becomes necessary to replace any or all Key Personnel, Consultant shall provide alternative personnel acceptable to OWNER with such skills, experience and knowledge that will fully fulfil the role of the individuals replaced in achieving completion of the Work in accordance with this Contract. Such replacement shall take place within 10 days of non-availability of the Key Personnel being replaced. Consultant agrees that such replacement will be avoided to the extent possible except as may be required by OWNER and that any such replacement will be carried out without delaying any Project Schedule. All key personnel shall be fluent in the English language. The consultant shall provide Bio Data of all key personnel.

13.1.5 Project Co-ordinator:

Consultant shall appoint, subject to OWNER's prior, written approval, a fully qualified, experienced and competent Project Co-ordinator who shall have complete and entire responsibility for executing all Work to OWNER's satisfaction. The Project Co-ordinator shall be the formal focal point for all OWNER related communications and management related matters and shall be fully authorised to bind Consultant for all purposes under this Contract.

13.1.6 OWNER/Consultant Interface:

Consultant shall co-ordinate and interface with OWNER's Representative during the performance of the Work.

13.1.7 Reporting:

Consultant shall, in accordance with the requirements contained in Scope of Work, periodically furnish OWNER with res, tabulations and charts containing all necessary information that will permit OWNER to review and analyse the status of Work.

13.1.8 Meetings:

Consultant shall, at OWNER's option attend meetings at OWNER's premises or other designated locations. Consultant shall be responsible for recording all minutes of meetings. The minutes of meetings shall be circulated by Consultant for OWNER's approval and OWNER shall notify its concurrence thereto or any amendments thereto, its representatives for attending all such meetings is deemed to be included in the Contract Price.

13.1.9 Site Supervision:

The Consultant shall observe all rules and regulations relating to the Site and the Work as are notified to it by the Site supervisor, OWNER or OWNER's Representative.

ARTICLE-14

At all stages of the design/engineering/construction phases of the project, consultant should built in suitable provisions to enable future expansion, change in configuration of pipeline project.

Schedule of Rates (SOR)

Schedule of Rates (SOR)

1. The bidder shall quote online on BPCL E-Procurement Website <https://bpcltenders.eproc.in/> as per enclosed price bid formats as detailed in this tender.
2. Bidders are required to submit the price bid online strictly in accordance with the price bid format attached. The price bid format blanking off the price figures should also be submitted along with Unpriced Bid.
3. The Lump sum price quoted for the complete job as per Scope of Part-A (office Works), Part – B (Office works- inspection charges for indigenous material shall be included in Part-B SOR for Office works) and Cadre wise man-month rate for Part- C (Site works), Inspection Charges for Foreign Inspection in Man-days, Man-hour rates for additional office work, cadre wise man-month rate for works quoted by the bidder shall be valid as per the bid validity clause mentioned in this tender and shall continue to remain valid thereafter till closing of contract and terms of contract. Further these rates shall remain firm during the tenure of the contract.

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4. The bidder shall also provide man-hour, quantity along with bid for various categories of manpower for a period of contract that is considered as a basis for LS price of Part-A & B. These rates have to be provided along with bid as per Notes point a) & b) of Sr.no.1 in Price bid format provided below.
5. The fixed lump sum prices and other rates set forth herein shall be inclusive of all costs, risks and expenses, professional tax, taxes including withholding taxes, overhead, profit and/ or total fee related to the satisfactory performance and completion of the work (**GST shall be extra**).
6. The lump sum charges and rates for consultancy shall exclude GST. Consultant to indicate the present rate of GST and the amount thereof in their price bid. However, any addition/ reduction over existing GST would be reimbursed/ recovered from the consultant. Any future additional taxes of such nature levied by Indian Government would be reimbursed at actual if the additional taxes are introduced during contract period.
7. The lump sum prices for Scope of work Part-A & B, Cadre wise Manmonth rate for Part-C, Man-hour rates for additional office work, Man day rates quoted for Inspection Services for Foreign materials; more explicitly described in “ Details of Work” chapter of this “Tender” shall include any and all costs related to management, supervision, design, engineering, surveys, attendance at all meetings with OWNER (whether at OWNER’s premises; OWNER’s nominated location or Consultant’s premises; any other location applicable during contract phase of the project), inspection, testing and quality assurance/ quality control of the work, as more particularly described in the scope of work, or elsewhere in the contract. Said lump sum prices and other rates shall include, but not be limited to the costs of all labour, supervision, management, (including but not be limited to, wages, benefits, payroll, taxes, travel, accommodation expenses and other costs thereto as are paid to employees), all equipment, communications equipment, communication charges (including those incurred by OWNER while in consultant’s offices), all administrative costs of consultant’s operation, all reproduction and graphic costs of whatever kind, postage and courier expenses, all insurance requirements and coverage, and all other costs or expenses of any kind which directly or indirectly relate to accomplishing the work and complying in full with the provisions of the contract, and which are not otherwise set forth or referred to in the Contract as reimbursable expense.
8. It is to be noted by the bidder that the lump sum quote of the consultant (for Part- A & B) & cadre wise manmonth rate for Part C) shall be inclusive of it’s all overheads & expenses of their Head/Branch Offices for Design, Engineering, Procurement services, Office support, inspection services for indigenous material etc. and all overheads & expenses for setting up of camp office & site offices at various spreads with necessary infrastructure facilities, Vehicles for their staff movement, accommodation, transportation, site office refreshment etc. for the performance of the contract.
9. THE OWNER reserves the right to reject any or all tenders without assigning any reasons whatsoever.
10. All payments in this tender will be made only in Indian Rupees.

11. THE OWNER reserves the right either to award part or full job.
12. Running Account payments to the Consultant shall be linked to the milestones devised for total completion of the project. The break-up of lump sum prices and man-month rate into milestones is only to facilitate payment to the bidder at desired intervals and that milestones break up is based on the entire scope of work entrusted to the consultant. Individual prices do not hold good on standalone basis.
13. Payment for each of the milestones shall be released only after completion of all activities contained in that particular milestone. The amounts payable to the consultant on completion of each milestone shall be equivalent to the percentage indicated against the milestones in the Payment Schedule.
14. The prices of foreign Inspections (Boarding, lodging, food expenses etc. all inclusive but exclusive of to and fro Economy class air fare) shall be payable extra as per separate item mentioned in SOR. However approval shall be taken from BPCL before undertaking any foreign travel and the reimbursement for the same shall be made to the consultant subject to submission of documents duly verified by consultants Finance Department. The reimbursements for the foreign shall be paid subject to submission of travel documents, bills etc.

The prices of indigenous Inspections (travel, boarding, lodging, food expenses etc. all inclusive) shall be included in Part B Office Works. No additional payment shall be made on this account.

PRICE BID FORMAT FOR EPMC JOB (SOR) (BOQ)

(NOTE: VENDORS HAS TO QUOTE ONLINE FOR THE PRICE BID) NOTES:

SOR Items No.	Item Description	Qty.	Unit	Unit Rate	Amount
10	Part-A (Office Work) : Basic Engineering, finalization of Process package, Design Basis, HAZID, HAZOP, SIL study, Pipeline Optimization Study, Surge Analysis etc. (Refer Scope of Work and SCC in Tender)	1	LS		
20	Part-B (Office Work): Detailed Engineering up to Project completion & Commissioning, Procurement Services, Project Management, Material Management, Expediting, Inspection of Indigenous Materials, Mechanical completion, Commissioning & handing over, Post Commissioning Stabilization support & Arbitration Support (if any)etc. (Refer IFB, ITB, Scope of Work, SCC, GCC, GTC etc.in Tender)	1	LS		
	Part-C (Site works) Construction Management Part C is comprised of four cadre wise man month rate of staff to be deployed as plan. Site Construction supervision, Material Store Management, Mechanical completion, Commissioning & handing over, Post Commissioning Stabilization support & Arbitration Support (if any) etc. (Refer IFB, ITB, Scope of Work, SCC, GCC, GTC etc. in Tender)				
SAP Item No 30	Part C – Monthly Rate RCM charges for carrying all construction and supervision as per scope of work	21	Month		
SAP Item No 40	Part C1 – Monthly Rate Site / Spread Incharge for carrying all construcion and supervision as per scope of work	94	Month		

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SAP item no 50.	Part C2 – Monthly Rate QA / Mechanical / Civil / Electrical / Instru and Telecom engineer etc. for carrying all construction and supervision as per scope of work	460	Month		
SAP Item No 60	Part C3 : Monthly Rate Store / HSSE / Monitoring and Other officer for carrying all construction and supervision as per scope of work	162	Month		
SAP Item No 70	Additional Manhour – Office works Profession Service engineer rate per extra hour for working towards hiring of engineer for contract assistance as per scope of work. Additional work / services to be performed from office inclusive of all overheads, charges etc. and no claim whatsoever shall be entertained over and above quoted rates except GST	1000	Man Hours		
SAP Item No 80	Inspection of Foreign Materials. Professional service consultancy service charges for the job as detailed in Scope of Work. Foreign Inspections (Boarding, lodging, food expenses etc. all inclusive but exclusive of to and fro Economy class air fare)	50	Man Days		
	Total of All Items				
	GST Amount				
	Total Amount including GST				

NOTE FOR ITEM-10, 20 of BOQ:

Break-up of Cost indicated in items 10, 20 of BOQ above in terms of estimated Man-hours and corresponding no. of persons shall be submitted separately in technical bid as per format provided:

The estimated man hours for office and man months for site work shall be used for LS rate basis purpose only.

(a) Man- Hours for Office work (Part A)

Grade/ Designation	No. of Persons	Estimated Man-Hours
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(b) Man- Hours for Office work (Part B)

Grade/ Designation	No. of Persons	Estimated Man-Hours

Bidder has to quote for all SOR Items (Item10 to 80) ; Part-A, Part-B, Part-C Consultant's man-hour rate for office work, rate for site works, Inspection charges towards inspection of materials outside India; online on e-proc website as Bid evaluation shall be on overall lowest basis put all items together including GST.

PROFORMA OF AGREEMENT

(On Non-Judicial paper of Rs.100/- value)

CONTRACT AGREEMENT FOR THE WORK OF -----
-----DATED 2001(Two Thousand and One) between M/s in the town of Hereinafter called the “Contractor/consultant” (Which term shall unless excluded by or repugnant to the subject or context include its successors and permitted assignees) of the one part and the Bharat Petroleum Corporation Limited hereinafter called the “OWNER” (which term shall unless excluded by or repugnant to the subject or context include its successors and assignees) of the other part.

WHEREAS

- (a) The Owner being desirous of having provided and executed works mentioned, enumerated or referred to in the tender documents including Short Tender Notice, General Tender Notice, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, Plans, Time Schedule for Completion of jobs, Agreed Variations other documents has called for Tender.
- (b) The contractor/consultant has inspected the site and surroundings of the works specified in the tender documents and has satisfied himself by careful examination before submitting his tender as to the nature of the surface strata, sub-soil and ground, the form and nature of site and local conditions, the quantities, nature and magnitude of the work, the availability of labour and material necessary for the execution of the work the means of access to site the supply of power and water thereto and the accommodation he may require and has made local and independent enquiries and obtained complete information as to the matters and things referred to or implied in the tender documents or having any connection therewith and has considered the nature and extent of all probable and possible situations, delays, hindrances or interference’s to or with the execution and completion of the work to be carried out under the Contract and has examined and considered all other matters, conditions and things and probable and possible contingencies and generally all matters incidental thereto and ancillary and thereof effecting the execution and completion of the work and which might have influenced him in making his tender.
- (c) The Notice Inviting Tender, General Conditions of Contract. Special Conditions of Contract, Specification, Drawings, Plans, Time Schedule of jobs, and other documents copies of all which are hereto annexed and marked “A” the letter of submission of tender and Acceptance

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of Tender and statement of agreement variations with its enclosure, copies of which are also hereto annexed and marked “B” form part of this contract though separately set out herein and or included in the expression “CONTRACT” wherever herein used.

AND WHEREAS:

The Owner accepted the Tender of the Contractor/consultant for the Provision and the execution of the said work at the rates stated in the Schedule of Quantities of works and finally approved by Owner (hereinafter called the ‘Schedule of Rates’) upon the terms and subject to the conditions of contract. Now this Agreement Witnessed and it is hereby agreed and declared as follows:

In consideration of the payment to be made to the contractor/consultant for the work to be executed by him, the contractor/consultant hereby covenants with the owner that the contractor/consultant shall and with duly provide execute and complete the said works and shall do and perform all other acts and things in the contract mentioned or described or which are to be implied there from or may be reasonably necessary for the completion of the said works and at the said times and in the manner and subject to the terms and conditions or stipulations mentioned in the contract.

In consideration of the due provision, execution and completion of the said works the Owner does hereby agree with the contractor/consultant that the Owner will pay to the contractor/consultant the respective amounts for the work actually done by him and approved by the Owner at the Scheduled Rates and such other sum payable to the contractor/consultant under provision of Contract, such payments to be made at such time in such manner as provided for in the contract.

AND

In consideration of the due provision, execution and completion of the sand works the contractor/consultant does hereby agree to pay such sums as may be due to the Owner for the services rendered by the Owner to the contractor/consultant such as power supply water supply and others as set for in the said contract and such other sums as may become payable to the Owner towards the controlled items of consumables materials or towards loss, damage to the Owner’s equipment’s, materials or towards loss, damage to the Owner’s equipment’s, materials construction plant and machinery, such payments to be made at such time and in such manner as is provided in the Contract.

