

**REQUEST FOR PROPOSAL (RFP)
FOR
SELECTION OF AGENCY
FOR
INSTALLATION OF DE-SLIMING SYSTEM
AT HUS (MK Unit)
ON
ENGINEERING PROCUREMENT
CONSTRUCTION (EPC) BASIS**



Unleashing Values

IREL (India) Limited

(A Govt. of India Undertaking – Dept. of Atomic Energy)

**Plot No. 1207, Veer Savarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi,
Mumbai- 400028. Website: <http://irel.co.in>**

Schedule of Tender

Tender No.	IREL/MK/ET/3/2025
Date of publishing of Tender document in IREL and CPP portal	16.05.2025. Interested agencies may view and download the Tender document containing the detailed terms & conditions, free of cost from the website https://www.etenders.gov.in/eprocure/app and https://www.irel.co.in . The bids are to be submitted as per procedure given in this Tender document.
Name of Work	REQUEST FOR PROPOSAL (RFP) FOR SELECTION OF AGENCY FOR INSTALLATION OF DE-SLIMING SYSTEM AT HUS (MK UNIT) ON ENGINEERING PROCUREMENT CONSTRUCTION (EPC) BASIS
Type of Tender	Open Tender, Single Stage Two Bid System Two cover System
Tendering Mode: CPP Portal	Public tender (Two cover System) <input type="checkbox"/> PreQualification Bid <input type="checkbox"/> Financial Bid
Cost of Tender Document	₹5,900/- (In case bidders download the Tender document from the website then no need to pay TDC)
Earnest Money Deposit (EMD)	₹73,40,000/-
Date & time of Starting of bid	16.05.2025
Last date submission of Pre-bid queries	-
Date of Pre-bid meeting	06.06.2025 at 11.00 AM
Bid Submission start date	16.05.2025,
Date of closing of bid for submission of Bids	03.07.2025, 14.00 PM
Date & time of opening of Cover 1	04.07.2025, 15.00 PM
Date & time of opening of Financial Bid	Shall be informed separately to the eligible bidders
Price bid opening date	18.07.2025
Declaration of Successful Bidder	To be decided
Issuance of Letter of Intent (LoI)/Work order	To be decided
Estimated Cost	₹36,68,00,000/- (excl. GST)
Validity of tender	120 days from bid due date
SD/PBG	5% of the contract value
Contact details of tender inviting authority	Shri Niranjana Sabata, CM – Technical (Purchase & Stores) IREL (India) Limited Manavalakurichi .PO., Kanyakumari District Email: purchase-mk@irel.co.in Phone 04651-237255-256 (Extn No. 04651-200402)

PRE BID MEETINGFriday, June 6th & 7th · 11:00am – 12:00pm

Time zone: Asia/Kolkata

Google Meet joining info

Video call link: <https://meet.google.com/urc-xihf-nvv>

DISCLAIMER

The information contained in this Request for Proposal document (the "**RFP**" or "**Bidding Document**") or subsequently provided to Bidder(s), whether verbally or in documentary or any other form, by or on behalf of IREL or any of its employees or advisors, is provided to Bidder(s) on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided. The information provided is only for the information and reference of the Bidders.

This RFP is not an agreement and is neither an offer by IREL to the prospective Bidder(s) or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in the formulation of their bid for participation in this RFP (the "**Bid**"). This RFP includes statements, which reflect various assumptions and assessments arrived at by IREL in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This RFP may not be appropriate for all persons, and it is not possible for IREL, its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this RFP. The assumptions, assessments, statements and information contained in this RFP may not be complete, accurate, adequate or correct. Each Bidder should therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this RFP and obtain independent advice from appropriate sources.

Information provided in this RFP to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. IREL accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

IREL, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Bidder, under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the RFP and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way with qualification of Bidders for participation in the Bidding Process. IREL also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this RFP. IREL may, in its absolute discretion but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this RFP.

The issue of this RFP does not imply that IREL is bound to select and short-list qualified Bids for Price Bid stage or to appoint the Selected Bidder for the Project, and IREL reserves the right to reject all or any of the Bids without assigning any reasons whatsoever.

The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by IREL or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and IREL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding Process.

Table of Contents

1	Introduction	6
1.1	Background	6
1.2	Proposed Project	6
1.3	Brief description of Bidding Process.....	7
1.4	Schedule of Bidding Process.....	7
2	Instructions to Bidders	9
2.1	Mode of Bidding	9
2.2	General terms of Bid	9
2.3	Conditions of Eligibility of Bidders.....	10
2.4	Pre-Qualification Criteria.....	11
2.5	Conflict of Interest	14
2.6	Change in ownership.....	16
2.7	Site visit	16
2.8	Pre-bid Conference.....	17
2.9	Clarifications.....	18
2.10	Amendment of the RFP	18
2.11	Cost of Bid and RFP Document.....	19
2.12	Acknowledgement by Bidder	19
2.13	Verification and disqualification	20
2.14	Right to accept/reject any or all Bids.....	20
2.15	Fraud and corrupt practices.....	20
2.16	Ethics in Tendering and Other Business Dealings	21
2.17	Integrity Pact	22
2.18	Tender/ RFP Documents	22
3	Preparation and submission of the Bid	23
3.1	Language	23
3.2	Bid Security	23
3.3	Structure of the Bid	24
3.4	Price Bid.....	26
3.5	Bid Due Date.....	26
3.6	Validity of Bids	26
3.7	Confidentiality	27

4	Bid Evaluation and selection of Bidder	27
4.1	Opening and Test of responsiveness	27
4.2	Evaluation of Bids.....	27
4.3	Selection of Bidder	28
5	Miscellaneous	30
5.1	General	30
5.2	Proprietary data	30
5.3	Contacts during Bid Evaluation.....	30
5.4	Correspondence with the Bidder.....	31
5.5	Preference to Make in India	31
	Appendix 1.....	33
	Annex-II to Appendix-1 – Technical Capacity of Bidder	38
	Annex-III to Appendix-1 – Financial Capacity of Bidder	40
	Annex-IV to Appendix-1 – Statement of Legal Capacity	41
	Appendix 2 – FORMAT OF BANK GUARANTEE FOR BID SECURITY	42
	Appendix 3 – FORMAT FOR POWER OF ATTORNEY FOR SIGNING OF BID	44
	Appendix 4 – FORMAT FOR SECRECY AGREEMENT	46
	Appendix 5 – SITE VISIT REQUEST FORM.....	49
	Annex-I to Appendix 5 – Details of Foreign Officials	51
	Appendix 6 – FORMAT FOR SITE VISIT CERTIFICATE.....	52
	Appendix 7 – FORMAT OF INTEGRITY PACT	53
	Appendix 8 – PAYMENT TERM.....	59
	Appendix 9 – FORMAT FOR PRICE BID	61
	Appendix 9.a – FORMAT of BOQ FOR EQUIPMENT AND TECHNOLOGICAL STRUCTURES.....	63
	Appendix 10 – CHECK LIST	64
	Appendix 11 – PROJECT DETAILS	66
	Appendix 12 – TERMS OF REFERENCES	68
	Appendix 13 – DRAFT OF AGREEMENT	69

1 Introduction

1.1 Background

- 1.1.1 IREL (India) Limited (Erstwhile Indian Rare Earths Ltd) –Mini Ratna Category-I company, is a Central Public Sector Enterprise (CPSE) of the Government of India under the administrative control of the Department of Atomic Energy. It is the largest beach sand mining & mineral separation company in India and has its operating units at Chavara (Kerala), Manavalakurichi (Tamil Nadu) & Odisha Sands Complex - OSCOM (Odisha).
- 1.1.2 IREL is presently mining beach sand minerals at the Manavalakurichi (MK) deposit situated in Kanyakumari district of Tamilnadu. The MK deposit, covering mining lease area of 148 Ha with 10-15% Heavy Minerals (HM) such as Ilmenite, Rutile, Zircon, Garnet and Sillimanite. The installed capacity of IREL MK unit is 1,14,600 tons per annum (tpa) of Ilmenite along with other associated minerals.

1.2 Proposed Project

- 1.2.1 IREL intends to process the raw material from River linking project site in Sathankulam area and Midalam deposit. The raw material (Teri sand) has approximately 10-15% HM content and 10-20% slime content. IREL intends to remove the slime content from the feed sand in Heavies Up-gradation section (HUS) based on the preliminary study report suggested by CSIR-NML, Chennai, by installation of Hydro cyclones, Attrition scrubber and slime handling system consisting Thickener/clarifier and filter press unit. (the "Project")
- 1.2.2 The Teri sand shall be fed at HUS @180 to 220 tons per hour(tph) and a quantity of 37,500 tons of Teri sand is expected to be fed at HUS per month. The quantity of HUS outputs, i.e HM concentrate and slime cake, shall vary depending on the content in Teri sand.
- 1.2.3 As part of this endeavour, IREL has decided to undertake installation of the Project on EPC (Engineering Procurement Construction) basis. Now, IREL intends to appoint an agency through this bid process for setting up of the Project on EPC basis.
- 1.2.4 The bidder can choose to either follow CSIR-NML developed flow sheet or opt to develop an alternate flow sheet.
- 1.2.5 The role of EPC contractor will include all the following activities, but will not be limited to:
 - 1. Engineering, procurement, construction, installation, erection, testing and commissioning of the project,
 - 2. Formulation of equipment SoPs (Standard Operating Procedures) and adherence to safety norms,
 - 3. Commissioning of the equipment and ensure commercial operation of the Plant within the time frame specified satisfying relevant safety & environmental norms.

IREL will remain owner of assets and products. IREL will undertake decision-making, monitoring and supervision related to engineering, procurement, erection and commissioning of equipment/ plant.

- 1.2.6 The bidder shall validate the flow sheet developed by CSIR-NML through a reputed agency located either in India or abroad. In the event the bidder opts to adopt an alternate flow sheet as against the one proposed by IREL, the bidder should have a tie-up with an internationally reputed test-work facility having prior expertise in characterization of Titaniferous Minerals along with associated slimes and shall carry out test work for the alternate flow sheet proposed to meet the deliverables and get it validated by test work facility. The bidder shall submit the test results meeting to the process deliverables along with the bid, failing which the bid will be rejected. IREL reserves the right to witness their test work prior to placement of order.
- 1.2.7 Irrespective of the flow sheet adopted by bidder, it is essential that the project shall achieve the Performance Guarantee parameters defined in Clause 9 of **Term of Reference (Appendix 12)**, for issue of Final Acceptance

1.3 Brief description of Bidding Process

- 1.3.1 IREL intends to select an agency for awarding the Project through competitive bidding process set out herein.
- 1.3.2 IREL has adopted a two part bidding process (collectively referred to as the **"Bidding Process"**) for selection of the agency for award of the Project. The process involves qualification of interested parties (the **"Bidder"**), who make the Bid in accordance with the provisions of this RFP. The Price Bids of the Technically Qualified Bidders will be opened for selection of the **"Selected Bidder"**.
- 1.3.3 The Bidders will submit their Bids in accordance with this RFP provided by IREL along with all other documents, flow sheets etc. (the **"Bidding Documents"**). The Bid shall be valid for a period of not less than 120 days from the Bid Due Date (the **"Bid Validity"**).
- 1.3.4 IREL shall receive Bids pursuant to this RFP in accordance with the terms set forth herein as modified, altered, amended and clarified from time to time by IREL, and all Bids shall be prepared and submitted in accordance with such terms on or before the date specified for submission of Bids (the **"Bid Due Date"**).
- 1.3.5 The Selected Bidder(the **"Agency"**)shall be responsible for engineering, procurement, construction, erection and commissioning of the Project under and in accordance with the provisions of an agreement (the **"Agreement"**) to be entered into between the Agency and IREL in the form provided by IREL as part of the Bidding Documents pursuant here to and scope detailed in this RFP. The Agreement sets forth the detailed terms and conditions for the Project, including the scope of the services and obligations.

1.4 Schedule of Bidding Process

- 1.4.1 IREL shall endeavor to adhere to the following schedule

S. No.	Activity Description	Date (Timeline from previous activity)
1.	Date of issue of RFP	16/05/2025
2.	Last date for receiving pre-bid queries	30/05/2025 (2 weeks)
3.	Site visit schedule	31/05/2025 - 03/06/2025
4.	Pre-bid conference	06/06/2025
5.	Bid Due Date	04/07/2025 (4 weeks)
6.	Bid opening - Opening of Pre-qualification Bid and Techno-commercial Bid	04/07/2025
7.	Opening of Price Bid	18/07/2025

- 1.4.2 In case the Bidder proposes its alternate flow sheet, bidders are advised to collect required sample from IREL Site by submitting requisition for the same from the date of issue of RFP till pre-bid conference.

2 Instructions to Bidders

2.1 Mode of Bidding

- 2.1.1 Bidder shall participate in the Bidding Process, as a consortium (maximum **two** members). Certificate of incorporation for the participating entities needs to be submitted along with Bid.
- 2.1.2 The Indian entity shall be the lead bidder of the consortium.
- 2.1.3 The Bidder may sub-contract part of works after approval from IREL. The Bidder shall include in the Bid details of all major items of supply or services that it proposes to subcontract.

2.2 General terms of Bid

- 2.2.1 No Bidder directly or through its affiliate/subsidiary/holding company shall submit more than one Bid for the Project.
- 2.2.2 No consortium member shall be part of more than one consortium for participation in Bidding Process nor can any member of consortium participate as a Single Entity separately.
- 2.2.3 Notwithstanding anything to the contrary contained in this RFP, the detailed terms specified in the draft Agreement shall have overriding effect; provided, however, that any conditions or obligations imposed on the Bidder hereunder shall continue to have effect in addition to its obligations under the Agreement.
- 2.2.4 Any condition or qualification or any other stipulation contained in the Bid shall render the Bid liable to rejection.
- 2.2.5 The Bid and all communications in relation to or concerning the Bidding Documents and the Bid shall be in English language.
- 2.2.6 The documents including this RFP and all attached documents, provided by IREL are and shall remain or become the property of IREL and are shared with the Bidders solely for the purpose of preparation and the submission of a Bid in accordance herewith. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The provisions of this Clause shall also apply mutatis mutandis to Bids and all other documents submitted by Bidders, and IREL will have the right not to return any Bid, document or any information provided along therewith to Bidders.
- 2.2.7 The statements and explanations contained in this RFP are intended to provide a better understanding to the Bidders about the subject matter of this RFP and should not be construed or interpreted as limiting in any way or manner the scope of services and obligations of the Agency set forth in the Agreement or IREL's rights to amend, alter, change, supplement or clarify the scope of work, the Project to be awarded pursuant to this RFP or the terms thereof or herein contained. Consequently, any omissions, conflicts or contradictions in the Bidding Documents including this RFP are to be noted, interpreted and applied appropriately to give effect to this intent, and no claims on that

account shall be entertained by IREL

2.3 Conditions of Eligibility of Bidders

The Bidders must read carefully the minimum conditions of eligibility (the "Conditions of Eligibility") provided herein, and shall submit the Pre-Qualification Bid for providing proof of satisfying the same. Bids of only those Bidders who satisfy the Conditions of Eligibility will be considered for evaluation. For determining the eligibility of Bidders, the following shall apply:

- 2.3.1 The Bidder, lead member of the consortium should be a Company registered in India under Indian Companies Act 1956 or 2013 or a Limited Liability Partnership under the Limited Liability Partnership Act of India, 2008.
- 2.3.2 A Bidder shall not have a conflict of interest (the "Conflict of Interest") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified subject to Clause 2.5.
- 2.3.3 The Bidder Should meet the Technical & Financial Pre-qualification Criteria as mentioned in Clause 2.4.
- 2.3.4 Any entity which has been barred by the Central/ State Government/ Public Sector Undertakings (PSUs), or any entity controlled by it, from participating in any project (EPC or otherwise), and the bar subsists as on the Bid Due Date, would not be eligible to submit a Bid.
 - i. A Bidder should, in the last 3 (three) years, have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder, as the case may be, nor has been expelled from any project or contract by any public entity nor have had any contract terminated by any public entity for breach by such Bidder.
 - ii. Provided, however, that where a Bidder claims that its disqualification arising on account of any cause or event specified in this clause is such that it does not reflect (a) any malfeasance on its part in relation to such cause or event; (b) any wilful default or patent breach of the material terms of the relevant contract; (c) any fraud, deceit or misrepresentation in relation to such contract; or (d) any rescinding or abandoning of such contract, it may make a representation to this effect to IREL for seeking a waiver from the disqualification hereunder and IREL may, in its sole discretion and for reasons to be recorded in writing, grant such waiver if it is satisfied with the grounds of such representation and is further satisfied that such waiver is not in any manner likely to cause a material adverse impact on the Bidding Process or on the implementation of the Project.

2.4 Pre-Qualification Criteria

Sl. No	Eligibility Criteria
a.	<p>The Bidder shall be a consortium of maximum two companies and the lead member must be a legal entity under the Indian Companies Act or Limited Liability Partnership Act.</p> <p>The following documents are to be furnished by the bidders</p> <ol style="list-style-type: none"> 1. Certificate of incorporation issued by Registrar of the Companies 2. GST registration certificate 3. PAN/TIN/TAN
b.	The average Annual turnover of the Bidder should not be less than Rs.11.00 Crores (11 Crores Indian Rupees) during the last three financial years (FYs) i.e. 2021-22, 2022-23 & 2023-24. (Annex-III of Appendix-1)
c.	Net worth of the bidder shall be positive for the last financial year(2023-2024) as per audited balance sheets
d.	<p>The Bidder should have completed at least 1(One) EPC Project/ projects in the field of Heavy Mineral Industry (operational as on NIT issue date), involving Engineering, procurement and commissioning of similar work.</p> <p>The Bidder shall submit Contract copies and Completion Certificates/Final acceptance certificates/commissioning certificates or any other relevant supporting documents in evidence of meeting the above requirement, as per format on Annex-II of Appendix-1</p> <p>"Similar Work" means design, engineering, procurement, construction, erection and commissioning of projects in Heavy Mineral sand industry.</p>
e	<p>The bidder/EPC contractor shall form a consortium (maximum 2 members) with another agency for execution of the project for meeting the Technical and Financial Eligibility requirements which are to be jointly met by the consortium members.</p> <p>The bidding consortium members shall select one of the member as lead member who will meet the entire financial criteria and other member/ agency should meet the entire technical criteria.</p> <p>In case the other member/ agency does not meet the technical criteria on its own, they are permitted to have a Licenser-Licensee arrangement/ MoU with a technology provider who meets the technical qualifications. In such case, the Bidder can use the credentials of their technology Licenser to meet the technical qualifications at (d) above</p>

f	<p>In the event the bidder opts to adopt an alternate flow sheet as against the one proposed by IREL the following Technical criteria would apply:</p> <p>The bidder should have a tie-up with an internationally reputed test-work facility having prior expertise in characterization of Titaniferous Minerals along with associated slimes for validating the flow sheet of their design.</p> <p>The Bidder shall submit a backup letter from the test-work facility and its full details in evidence of meeting the above requirement.</p> <p>In such a case, the bidder shall carry out test work for the alternate flow sheet proposed to meet the deliverables and get it validated by test work facility. The bidder shall submit the test results meeting to the process deliverables along with the bid, failing which the bid will be rejected. IREL reserves the right to witness their test work prior to placement of order.</p> <p>Note: Samples for the test work shall be provided by IREL on request by the bidder. The cost towards the Test work and validation by test-work facility shall be under bidder's scope.</p>
---	---

2.4.1 The Bidder must score a minimum of 50 marks to be qualified for price bid opening, as per the criteria of QBS-Bidder Evaluation Matrix mentioned below,

Sl.No	Bidder Evaluation Parameter	Max. Marks
1	The bidder must have successfully completed EPC project/ projects in the heavy mineral sands industry Scoring Method 10 Marks for each completed EPC Project/ projects (max. 3 references)	30
2	The bidder must have successfully completed projects in the heavy mineral sands industry involving de-sliming Scoring Method 15 Marks for each completed Project involving de-sliming (max. 2 references)	30
3	The average Annual turnover of the bidder Scoring Method Up to Rs.11.00 Crores: Nil Rs.11.0 Crores to Rs.25 Crores: 5 marks Above Rs.25 Crores: 10 marks	10
4	Slimes content guaranteed by the Bidder in the HM product from HUS Scoring Method Slime content in the range ≥0.1% & <0.2%: 5 marks <0.1%: 10 marks	10
5	Bidders detailed presentation on IREL on their Plan & Methodology for execution of the Project.	20
Total Marks		100

Note: Bidders have to submit the requisite work orders/certificates or any other relevant documents to establish

1. That they have successfully executed the claimed assignment. The qualifications at (1) and (2) can be met through the same or different projects.
2. Bidders are permitted to use the credentials of their technology Licensor/OEM

and/or consortium partner to meet the technical qualifications.

- 2.4.2 In case the technical and/ or financial strength of an Associate is used for qualification, the Associate will be required to provide a Letter of Support from the Associate to allow the use of its technical and/ or financial strength by the Bidder for the purpose of the Project and committing all necessary technical and/ or financial assistance required by the Bidder for the execution of the Project.
- 2.4.3 The bidder, shall select one of the members as lead member who will meet the entire financial criteria and other member/agency should meet the entire technical criteria.
- 2.4.4 In case the other member/agency does not meet the technical criteria on its own, they are permitted to have a Licensor-Licensee arrangement/ MoU with a technology provider who meets the technical qualifications. In such case, the Bidder can use the credentials of their technology Licensor to meet the technical qualifications at 2.4.1.
- 2.4.5 The terms, conditions and liabilities shall be applicable on all consortium members. The Bidder will be required to provide a consortium agreement with defined responsibility matrix and power of attorney of support to the Lead Member.
- 2.4.6 The bidder shall install equipment as per the makes and specification provided in the Technical specification of the tender.
- 2.4.7 The Bidder or any of its key managerial persons should not have any conflict of interest with IREL in the business of mining and mineral separation of beach sand minerals in India.
- 2.4.8 For process equipment like Screen, Hydrocyclones, Cluster hydrocyclones, Attrition Scrubbers, thickener, filter press etc., the prospective equipment manufacturers (OEMs) of respective equipments shall have to provide performance assurance/guarantee agreement to the bidder for meeting to the deliverables mentioned in the tender.
- 2.4.9 In case the annual accounts for the latest financial year are not audited and therefore the Bidder cannot make it available, the Bidder shall give an undertaking to this effect and the practicing chartered accountant shall certify the same. In such a case, the Bidder shall provide the Audited Annual Reports for 3 (three) years preceding the year for which the Audited Annual Report is not being provided. For the avoidance of doubt, financial year shall, for the purposes of a Bid hereunder, mean the accounting year followed by the Bidder in the course of its normal business.
- 2.4.10 In case of any certificates, work orders, contracts, agreements, copies of permits/license/ certificate of registration, documents, declaration, issued in any country other than India are used for proof towards qualification; the same will have to be duly notarized.

2.5 Conflict of Interest

- 2.5.1 A Bidder shall not have a conflict of interest (the "**Conflict of Interest**") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified. In the event of disqualification, IREL shall be entitled to forfeit and appropriate the Bid

Security or Security Deposit, as the case may be, as mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by IREL and not by way of penalty for, inter alia, the time, cost and effort of IREL, including consideration of such Bidder's Bid (the "**Damages**"), without prejudice to any other right or remedy that may be available to IREL under the Bidding Documents and/ or the Agreement or otherwise. Without limiting the generality of the above, a Bidder shall be deemed to have a Conflict of Interest affecting the Bidding Process, unless specifically permitted elsewhere in the RFP documents, if:

- a. the Bidder, or its any Associate (or any constituent thereof), and any other Bidder, or its any Associate thereof (or any constituent thereof) have common controlling shareholders or other ownership interest; provided that this disqualification shall not apply in cases where the direct or indirect shareholding of a Bidder, its Associate thereof (or any shareholder thereof having a shareholding of more than 5% (five per cent) of the paid up and subscribed share capital of such Bidder or Associate, as the case may be) in the other Bidder or Associate, is less than 5% (five per cent) of the subscribed and paid up equity share capital thereof; provided further that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in sub-section (72) of section 2 of the Companies Act, 2013. For the purposes of this Clause, indirect shareholding held through one or more intermediate persons shall be computed as follows: (aa) where any intermediary is controlled by a person through management control or otherwise, the entire shareholding held by such controlled intermediary in any other person (the "**Subject Person**") shall be taken into account for computing the shareholding of such controlling person in the Subject Person; and (bb) subject always to sub-clause (aa) above, where a person does not exercise control over an intermediary, which has shareholding in the Subject Person, the computation of indirect shareholding of such person in the Subject Person shall be undertaken on a proportionate basis; provided, however, that no such shareholding shall be reckoned under this sub-clause (bb) if the shareholding of such person in the intermediary is less than 26% of the subscribed and paid up equity shareholding of such intermediary; or
- b. such Bidder, or any Associate thereof receives or has received any direct or indirect subsidy, grant, concessional loan or subordinated debt from any other Bidder, or any Associate thereof or has provided any such subsidy, grant, concessional loan or subordinated debt to any other Bidder or any Associate thereof; or
- c. such Bidder has the same legal representative for purposes of this Bid as any other Bidder; or
- d. such Bidder, or any Associate thereof has a relationship with another Bidder, or any Associate thereof, directly or through common third party/ parties, that puts either or both of them in a position to have access to each other's information about, or to influence the Bid of either or each other; or

- e. such Bidder, or any Associate thereof has participated as a consultant to IREL in the preparation of any documents, design or technical specifications of the Project.

For purposes of this RFP, Associate means, in relation to the Bidder, a person who controls, is controlled by, or is under the common control with such Bidder (the "**Associate**"). As used in this definition, the expression "control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person by operation of law.

- 2.5.2 A Bidder shall be liable for disqualification and forfeiture of Bid Security if any legal, financial or technical adviser of IREL in relation to the Project is engaged by the Bidder, or its Associate thereof, as the case may be, in any manner for matters related to or incidental to such Project during the Bidding Process or subsequent to the issuance of the LOI or execution of the Agreement. In the event any such adviser is engaged by the Selected Bidder or Agency, as the case may be, after issue of the LOI or execution of the Agreement for matters related or incidental to the Project, then notwithstanding anything to the contrary contained herein or in the LOI or the Agreement and without prejudice to any other right or remedy of IREL, including the forfeiture and appropriation of the Bid Security or Security Deposit, as the case may be, which IREL may have there under or otherwise, the LOI or the Agreement, as the case may be, shall be liable to be terminated without IREL being liable in any manner whatsoever to the Selected Bidder or Agency for the same. For the avoidance of doubt, this disqualification shall not apply where such adviser was engaged by the Bidder or its Associate in the past but its assignment expired or was terminated prior to the date of issuance of RFP. Moreover, this disqualification shall not apply where such adviser is engaged by the Bidder, or its Associate in any work not related to the Project; the Bidder or Selected Party or Agency will however keep IREL informed in any such case(s). This disqualification will not apply where such adviser is engaged by the Agency after a period of 6 (six) months from the date of LoI of the Project or by the unsuccessful Bidders after the issuance of LOI to the Selected Bidder.

2.6 Change in ownership

- 2.6.1 By submitting the Bid, the Bidder shall also be deemed to have acknowledged and agreed that in the event of a change in control / change in ownership of the Bidder, the Bidder's liability to honor the agreement and complete the Project would be continued.

2.7 Site visit

- 2.7.1 Bidders are required to submit their respective Bids after visiting the Project site and ascertaining for themselves the site conditions, location, surroundings, climate,

availability of power, water and other utilities for construction, access to site, handling and storage of materials, weather data, applicable laws and regulations, and any other matter considered relevant by them.

- 2.7.2 Bidders are invited to examine the Project in greater detail, and to carry out, at their cost, such studies as may be required for submitting their respective Bids for award of the Project.
- 2.7.3 Interested Bidders may send a request to IREL for site visit at least one week prior to the site visit date as specified in Schedule of Bidding Process (Ref: Clause 1.4). In case of any foreign national, the form as given in Annex-1 of Appendix-5 needs to be sent at least 15 days in advance. Interested Bidders are requested to check the websites for any change in the dates of site visit, if any.
- 2.7.4 The Site Visit Request Form is attached in Appendix-5. After receipt of filled and signed Site Visit Request Form, IREL will confirm for site visit to the Bidder.
- 2.7.5 Two people from IREL: Technical Person and Security Person will accompany the Bidder's team (proposed in the Site Visit Request Form) during the site visit only during the dates mentioned for the Site Visit.
- 2.7.6 The Bidder is required to submit a Declaration of Site Visit signed by the authorized signatory of the Bidder as per the format attached in Appendix-6.
- 2.7.7 The expenses (Travel, accommodation etc) for Site Visit and attending Pre-bid conference and any other expenses relating to bid preparation will be borne by the Bidder.
- 2.7.8 During site visit, if any Bidder shows interest in developing separate flowsheet (other than the flow sheet given in Appendix 12 – Terms of Reference) for the purpose of improved performance of the proposed facilities, IREL, on request, may provide samples to the same Bidder for the purpose of carrying out test work and development of new/modified process flow sheet(s). IREL may witness these test work at its discretion.
- 2.7.9 All expenses related to sampling, collection and transportation of samples, test work and design & development of new/ modified process flowsheet will be borne by the Bidder.
- 2.7.10 It is to be noted that in case a Bidder is proposing new/ modified flowsheet for the purpose of this Project, the Bidder need to carry out performance guarantee test as specified in Clause 9 of Part-I of the Terms of Reference (Appendix 12).
- 2.7.11 The interested Bidder(s) willing to develop their own flowsheet may send such request for collection of samples from the date of issue of RFP till pre-bid conference.
- 2.7.12 IREL at its discretion may accept or reject the proposal of interested Bidder(s) for carrying out the test work for the purpose specified herein.

2.8 Pre-bid Conference

- 2.8.1 The Site Visit will be followed by Pre-bid Conference for the Project. The date, time and venue of the Pre-Bid Conference will be:

Date and Time: As mentioned in Schedule of Bidding Process (Ref: Clause 1.4)

Venue: **IREL (India) Limited,**
Manavalakurichi,
Kanyakumari District,
Tamil Nadu 629252

- 2.8.2 Any queries or request for additional information concerning this RFP shall be submitted in writing by speed post/ courier/ special messenger and by e-mail so as to reach the officer designated below by the specified date.

Mr. P. J. Biju / Mr. Niranjana Sabata
DGM-Tech (Production) / CM-Tech (Purchase & Stores)
IREL (India) Limited
Manavalakurichi,
Kanyakumari District, Tamil Nadu 629252
Email: production-mk@irel.co.in, purchase-mk@irel.co.in

The communications shall clearly bear the following identification/ title:

"Queries/ Request for Additional Information: RFP for Selection of Agency for installation of De-sliming system at HUS, IREL-MK, Tamil Nadu on EPC Basis".

2.9 Clarifications

- 2.9.1 IREL shall endeavour to respond to the queries no later than fifteen (15) days prior to the Bid Due Date. The responses will be uploaded on IREL website www.irel.co.in or www.eprocure.gov.in/epublish/app.
- 2.9.2 IREL shall endeavor to respond to the questions raised or clarifications sought by the Bidders. However, IREL reserves the right not to respond to any question or provide any clarification, in its sole discretion, and nothing in this Clause shall be taken or read as compelling or requiring IREL to respond to any question or to provide any clarification.
- 2.9.3 IREL may also on its own motion, if deemed necessary, issue interpretations and clarifications to all Bidders. All clarifications and interpretations issued by IREL shall be deemed to be part of the Bidding Documents. Verbal clarifications and information given by IREL or its employees or representatives shall not in any way or manner be binding on IREL.

2.10 Amendment of the RFP

- 2.10.1 At any time prior to the Bid Due Date, IREL may, for any reason, whether at its own initiative or in response to clarifications requested by Bidders, modify the RFP by the issuance of addenda.
- 2.10.2 Any addendum issued hereunder will be in writing and shall be uploaded on IREL

website www.irel.co.in or www.eprocure.gov.in/epublish/app.

2.10.3 In order to allow the Bidders a reasonable time for taking an addendum into account, or for any other reason, IREL may, in its sole discretion, extend the Bid Due Date.

2.11 Cost of Bid and RFP Document

2.11.1 The Bidders shall be responsible for all of the costs associated with the preparation of their Bids and their participation in the Bidding Process. IREL will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

2.11.2 The Bidders can purchase the RFP document from IREL office at Manavalakurichi by paying a sum of **INR 5000/-** (Rupees Five thousand only) exclusive of GST as the cost of the RFP document, in the form of Demand Draft in favour of IREL (India) Limited, payable at Manavalakurichi issued from any Scheduled Bank in India.

2.11.3 The Bidders can also download the document from IREL website www.irel.co.in or www.eprocure.gov.in/epublish/app. Bidders who download the RFP document online need not submit any amount towards the cost of RFP document along with its bid.

2.12 Acknowledgement by Bidder

2.12.1 It shall be deemed that by submitting the Bid, the Bidder has:

- a. made a complete and careful examination of the RFP;
- b. Understood the entire scope of work to be carried out under the RFP
- c. accepted the risk of inadequacy, error or mistake in the information provided in the RFP or furnished by or on behalf of IREL relating to any of the matters referred to in this Clause; and
- d. agreed to be bound by the undertakings provided by it under and in terms hereof.

2.12.2 IREL shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the RFP or the Bidding Process, including any error or mistake therein or in any information or data given by IREL.

2.12.3 In case it is found during the evaluation or at any time before signing of the Agreement or after its execution and during the period of subsistence thereof, including the Project thereby granted by IREL, that one or more of the qualification conditions have not been met by the Bidder, or the Bidder has made material misrepresentation or has given any materially incorrect or false information, the Bidder shall be disqualified and shall be liable to be terminated, as the case may be, without IREL being liable in any manner whatsoever. In such an event, IREL shall be entitled to forfeit and appropriate the Bid Security or Security Deposit, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to IREL under the Bidding Documents and/

or the Agreement or under Applicable Law, or otherwise. Further, IREL reserves right to take any other action which it may deem appropriate.

2.13 Verification and disqualification

2.13.1 IREL reserves the right to verify all statements, information and documents submitted by the Bidder in response to the RFP or the Bidding Documents and the Bidder shall, when so required by IREL, make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification, by IREL shall not relieve the Bidder of its obligations or liabilities hereunder nor will it affect any rights of IREL there under.

2.13.2 IREL reserves the right to reject any Bid and appropriate the Bid Security if:

a. at any time, a material misrepresentation is made or uncovered, or

2.13.3 Such misrepresentation/ improper response shall lead to the disqualification of the Bidder.

2.14 Right to accept/reject any or all Bids

2.14.1 Notwithstanding anything contained in this RFP, IREL reserves the right to accept or reject any Bid and to annul the Bidding Process and reject all Bids, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons therefore.

2.15 Fraud and corrupt practices

2.15.1 The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process. Notwithstanding anything to the contrary contained herein, IREL may reject a Bid without being liable in any manner whatsoever to the Bidder if it determines that the Bidder has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process.

2.15.2 Without prejudice to the rights of IREL under above Clause hereinabove, if a Bidder is found by IREL to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, such Bidder shall not be eligible to participate in any tender or RFP issued by IREL during a period of 2 (two) years from the date such Bidder is found by IREL to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as the case may be.

2.15.3 For the purposes of this Clause, the following terms shall have the meaning hereinafter respectively assigned to them:

a. "corrupt practice" means (i) the offering, giving, receiving, or soliciting, directly

or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to, or employing, or engaging in any manner whatsoever, directly or indirectly, any official of IREL who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LOI or has dealt with matters concerning the Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of IREL, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) save and except as permitted under sub clause 2.5.2 of Clause 2.5, engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOI or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOI or the Agreement, who at any time has been or is a legal, financial or technical adviser of IREL in relation to any matter concerning the Project;

- b. "fraudulent practice" means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;
- c. "coercive practice" means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the Bidding Process;
- d. "undesirable practice" means (i) establishing contact with any person connected with or employed or engaged by IREL with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
- e. "restrictive practice" means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

2.16 Ethics in Tendering and Other Business Dealings

2.16.1 IREL is doing its business as per the rules and regulation of the Public Sector Undertaking and other statutory agencies. The business is done in an ethical, rational & impartial manner with good Corporate Governance.

2.16.2 In our endeavour to be more transparent in our dealings and to support our ideology all Vendors, Customers and Business Partners are requested not to provide any gift and /or inducement to any of our employees for securing/being granted favour in dealings with our Company. In assurance of your commitment to the aforesaid, it will be highly appreciated if you fill up, sign and abide by the attached undertaking format in Appendix-14.

2.16.3 Report of any gifts and /or inducements sought by any employee of the company (IREL) should be immediately reported to any one of the following:

Sri S B Mohanty Chairman & MD I/C IREL (India) Limited 1207 VS Marg,Prabhadevi, Mumbai 400 028 Ph.022-24225778 Email: cmd@irel.co.in	Sri Ajithkumar Vasantrao Sontakke, IOFS Chief Vigilance Officer IREL (India) Limited 1207 VS Marg,Prabhadevi Mumbai 400 028 Ph.022-24221068 Email: cvo@irel.co.in
--	---

2.16.4 We assure you those complaints, if any, made by you on the subject will be kept confidential and fair investigation will be conducted and appropriate action will be taken. Similarly, we expect your commitment to the under taking and its violation will have consequences as per prevailing rule of the company.

2.17 Integrity Pact

2.17.1 The Bidder is required to enter into an **"Integrity Pact"** with IREL.

- a. The Bidder is required to submit the signed Integrity Pact in the form and manner described in the RFP. The Integrity Pact has to be signed by the authorized signatory of the Bidder
- b. In case the Bidder is a consortium, the Integrity Pact shall be signed by all the consortium members.
- c. In case of failure to submit the Integrity Pact along with the Bid, duly signed by the authorized signatory, IREL shall have the right to disqualify the Bid.

2.18 Tender/ RFP Documents

2.18.1 This RFP comprises the disclaimer set forth herein above, the contents as provided in the appendix and annexure and enclosed herewith, and will additionally include any addenda or corrigendum or clarification issued by IREL in accordance with Clause 2.9 and 2.10.

3 Preparation and submission of the Bid

3.1 Language

- 3.1.1 The Bid and all related correspondence and documents in relation to the Bidding Process shall be in English language. Supporting documents and printed literature furnished by the Bidder with the Bid may be in any other language provided that they are accompanied by translations of all the pertinent passages in the English language, duly authenticated and certified by the Bidder. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Bid, the English language translation shall prevail.

3.2 Bid Security

- 3.2.1 In terms of the RFP, a Bidder will be required to deposit, along with its Bid, a bid security for **INR Seventy three Lakh forty thousand (73.4 lakhs)** (the "**Bid Security**"). The Bidders will have to provide Bid Security in the form of a bank guarantee acceptable to IREL (the format for Bank Guarantee is provided at Appendix 2). The validity period shall not be less than 150 (one hundred and fifty) days from the Bid Due Date, with an additional claim period of 30 (thirty) days, and may be extended as may be mutually agreed between IREL and the Bidder from time to time. The Bid Security will issued by a Scheduled Bank, in favour of "IREL (India) Limited", payable at Manavalakurichi, Kanyakumari District, Tamil Nadu. In case the Bank Guarantee is issued by a foreign bank outside India, confirmation of the same by any Nationalised Bank in India is required. For the avoidance of doubt, Scheduled Bank shall mean a bank as defined under Section 2(e) of the Reserve Bank of India Act, 1934.
- 3.2.2 The genuineness of bank guarantee shall be checked by IREL from the issuing bank.
- 3.2.3 IREL shall not be liable to pay any interest on the Bid Security deposit so made and the same shall be interest free.
- 3.2.4 Any Bid not accompanied by the Bid Security shall be summarily rejected by IREL as non-responsive.
- 3.2.5 The Bid Security of unsuccessful Bidders will be returned by IREL, without any interest, within 30 (thirty) days from the LOI issuance to the Selected Bidder.
- 3.2.6 The Selected Bidder's Bid Security will be returned, without any interest, upon the Agency signing the Agreement and Selected Bidder furnishing the Security Deposit in accordance with the provisions thereof..
- 3.2.7 IREL shall be entitled to forfeit and appropriate the Bid Security as Damages inter alia in any of the events specified in the RFP. The Bidder, by submitting its Bid pursuant to this RFP, shall be deemed to have acknowledged and confirmed that IREL will suffer loss and damage on account of withdrawal of its Bid or for any other default by the Bidder during the period of Bid Validity as specified in this RFP. No relaxation of any kind on Bid Security shall be given to any Bidder.

3.2.8 The Bid Security shall be forfeited as Damages without prejudice to any other right or remedy that may be available to IREL under the Bidding Documents and/ or under the Agreement, or otherwise, if

- a. a Bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice as specified in this RFP;
- b. a Bidder submits false/fabricated documents;
- c. a Bidder withdraws its Bid during the period of Bid validity as specified in this RFP and as extended by mutual consent of the respective Bidder(s) and IREL;
- d. a Bidder changes the terms and conditions or prices or withdraw his Bid subsequent to the date of opening.
- e. A Bidder fails to accept the order when placed or fails to commence supplies/ works/ services/ after declared as Selected Bidder.
- f. the Selected Bidder fails within the specified time limit-
 - i. to sign and return the duplicate copy of LOI; or
 - ii. to sign the Agreement; or
 - iii. to furnish the Security Deposit within the period prescribed therefore in the Agreement
- g. the Selected Bidder, having signed the Agreement, commits any breach thereof prior to furnishing the Security Deposit.

3.3 Structure of the Bid

The Bidders will prepare their bids in the structure and sequence provided below. In case the Bids are not found as per the required structure, IREL shall have the right to declare the Bid as non-responsive and the Bid shall not be considered for further evaluation. The Bid shall comprise two Parts, namely the Techno-commercial Part and the Financial Part. These two Parts shall be submitted simultaneously.

The following conditions shall be adhered to while submitting a Bid:

- i. Bidders should attach clearly marked and referenced continuation sheets in the event that the space provided in the prescribed forms in the Annexure is insufficient. Alternatively, Bidders may format the prescribed forms making due provision for incorporation of the requested information;
- ii. Information supplied by a Bidder must apply to the Bidder or its Associate named in the Bid and not, unless specifically requested, to other associated companies or firms;
- iii. In case the Bidder is a consortium, all the documents/ information submitted by each member shall be signed and stamped by the authorized signatory of Lead Member.

Bids comprise two Parts, namely the Techno-commercial Part and the Financial Part, and both parts must be submitted simultaneously online on: [https:// eprocure.gov. in /eprocure /app](https://eprocure.gov.in/eprocure/app) (website) on or before 1500 hours on 04.07.2025 and the 'Techno-commercial Part' of the bids will be publicly opened online on the same day at 1530 hours, in the presence of the bidders' designated representatives and anyone who choose to attend. The "Financial Part" shall remain unopened in the e-procurement system until the second public Bid opening for the financial part. Any bid or modifications to bid (including discount) received outside e-procurement system will not be considered. The electronic bidding system would not allow any late submission of bids.

Techno-commercial Bid: The Technical bid will comprise of (Pre-qualification bid and Techno-commercial bid) the following in below mentioned order:

- a) Letter comprising the Bid along with particulars of Bidder in Annex-I of Appendix-1
- b) Annex-II of Appendix 1: Technical Capacity of Bidder
- c) Annex- III of Appendix 1: Financial Capacity of Bidder
- d) Annex- IV of Appendix 1: Statement of Legal Capacity
- e) Bid Security
- f) Power of Attorney(s) as per Appendix 3 of RFP
- g) Site Visit Certificate as per Appendix 6
- h) Certificate of Registration, Incorporation, along with Memorandum and Articles of association of Bidding entity and its Associate (if applicable)
- i) Letter of Support from the Associate (if applicable)
- j) Consortium agreement with responsibility matrix
- k) Licensor/Licensee Agreement
- l) All documentary proof for the above mentioned Annexes as mentioned in the RFP
- m) Signed copy of Integrity Pact as per Appendix 7
- n) Undertaking as per Appendix 14
- o) Techno-Commercial Bid according to details given/ requested in Appendix 12: Terms of Reference
- p) Signed copy of RFP and draft Agreement including all addendum, corrigendum and clarification as a token of acceptance of all the tender terms and conditions
- q) Unpriced Price Bid (as per format in Appendix 9) along with

unpriced BOQ as defined in Clause 3.4.4 .

r) Any other document as mentioned elsewhere in the RFP

The Techno-commercial Bid shall be prepared in line with the details given in Appendix-12: Terms of Reference and other information sought under this RFP. The Techno-commercial Bid shall include Bidder's understanding of the project, its proposal for the proposed facilities, and compliance to the scope of work as well as its adherence to project Implementation Schedule.

Price Bid: This bid will comprise of the Price Bid and filled up BOQs formats as per format provided in Appendix 9 of the RFP.

3.4 Price Bid

- 3.4.1 The Bidder will be required to quote Lump Sum (LS) Price (in INR) as part of the Price Bid.
- 3.4.2 The Bidder will submit their Price Bids in the format provided at Appendix 9 of the RFP.
- 3.4.3 The Price Bid should be furnished clearly indicating the bid amount in both figures and words (in Indian Rupees as per format provided) and signed by the Bidder's authorized signatory. In the event of any difference between figures and words, the amount indicated in words shall prevail.
- 3.4.4 The Bidder will be required to submit detailed BOQ (for facilitation of payment) corresponding to the value for supply of material (including equipment, technology structure, mechanical, civil, structural and other components and any other utilities required for the Project) and services as mentioned in the Price Bid format, Appendix-9.
- 3.4.5 In case certain items are missed out/not mentioned separately/explicitly in the BOQ, it shall not absolve the Bidder of any of its responsibilities under the Agreement. The Bidder will be responsible to complete the entire scope of work as brought out in the RFP and Agreement without any price addition.

3.5 Bid Due Date

- 3.5.1 Bids should be submitted before 1500 hours IST on the Bid Due Date in the manner and form as detailed in this RFP.

IREL may, in its sole discretion, extend the Bid Due Date by issuing an Addendum in accordance with Clause 2.10 uniformly for all Bidders.

3.6 Validity of Bids

- 3.6.1 The Bids shall be valid for a period of not less than 120 (one hundred and twenty) days from the Bid Due Date. The validity of Bids may be extended by mutual consent of the respective Bidders and IREL.

3.7 Confidentiality

- 3.7.1 Information relating to the examination, clarification, evaluation and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising IREL in relation to, or matters arising out of, or concerning the Bidding Process. IREL will treat all information, submitted as part of the Bid, in confidence and will require all those who have access to such material to treat the same in confidence. IREL may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or IREL or as may be required by law or in connection with any legal process.

4 Bid Evaluation and selection of Bidder

4.1 Opening and Test of responsiveness

- 4.1.1 The Bid will be opened through online mode on: <https://eprocure.gov.in/eprocure/app> (website) after submission of the bid at 1530 hours on the Bid Due Date, at the place specified below.

Address for Bid Opening: IREL (India) Limited,
Manavalakurichi,
Kanyakumari District, Tamil Nadu - 629252

Prior to evaluation of Bids, IREL shall determine whether each Bid is responsive to the requirements of the RFP. A Bid shall be considered responsive if:

- a) it is received by Bid Due Date (including any extension thereof) as per format prescribed along with all filled up forms, data/ details/ documents requested in this RFP;
 - b) it does not contain any condition or qualification; and
 - c) it is not non-responsive in terms hereof.
- 4.1.2 IREL reserves the right to reject any Bid that is non-responsive and no request for alteration, modification or substitution shall be entertained by IREL in respect of such Bid. Provided, however, that IREL may, in its discretion, allow the Bidder to rectify any infirmities or omissions if the same do not constitute a material modification of the Bid.

4.2 Evaluation of Bids

- 4.2.1 Following evaluation process will be adopted by IREL:-

- IREL will open the Techno-commercial bid on the Bid Due date.
- After evaluation of Techno-Commercial Bid, IREL will open the Price Bid only of the Technically Qualified Bidders.

- 4.2.2 Bidders will be deemed to have understood and agreed that no explanation or justification on any aspect of the Bidding Process or selection will be given.
- 4.2.3 Any information contained in the Bid shall not in any way be construed as binding on IREL, its agents, successors or assigns, but shall be binding against the Bidder if the Project is subsequently awarded to it on the basis of such information. IREL reserves the right not to proceed with the Bidding Process at any time without notice or liability and to reject any or all Bid(s) without assigning any reasons.
- 4.2.4 If any information furnished by the Bidder is found to be incomplete, or contained in formats other than those specified herein, IREL may, in its sole discretion, seek clarification from the Bidder or exclude the relevant project from Bid evaluation.
- 4.2.5 In the event that a Bidder claims credit for an eligible project, and such claim is determined by IREL as incorrect or erroneous, IREL shall reject such claim and exclude the same from Bid evaluation. Where any information is found to be patently false or amounting to a material misrepresentation, IREL reserves the right to reject the Bid.

4.3 Selection of Bidder

- 4.3.1 Subject to the provisions of Clause 2.3, the Bidder whose Bid is adjudged as responsive in terms of Clause 4.1 and who quotes the lowest LS Price with Taxes shall be declared as the Selected Bidder (the **"Selected Bidder"**).
- 4.3.2 After selection, a Letter of Intent (the **"LOI"**) shall be issued, in duplicate, by IREL to the Selected Bidder and the Selected Bidder shall, within 7 (seven) days of the receipt of the LOI, sign and return the duplicate copy of the LOI in acknowledgement thereof. In the event the duplicate copy of the LOI duly signed by the Selected Bidder is not received by the stipulated date, IREL may, unless it consents to extension of time for submission thereof, appropriate the Bid Security of such Selected Bidder as Damages on account of failure of the Selected Bidder to acknowledge the LOI.
- 4.3.3 The Selected Bidder will be required to submit the Security Deposit as mentioned in the Agreement within a period of twenty one (21) days from the receipt of LOI or at the time of signing of the Agreement, whichever is earlier. The Selected Bidder will have to keep its Bid Security valid for a period of at least thirty (30) days later than the date of submission of Security Depositor verification of Security Deposit by IREL, whichever is later; and extend the validity of its Bid Security appropriately to meet this criteria. In case the Bid Security validity, as requested hereinabove, is not maintained by the Selected Bidder, IREL will have the right to encash the Bid Security of the Selected Bidder. In the event the Security Deposit is not received by the stipulated date, IREL may, unless it consents to extension of time for submission thereof, appropriate the Bid Security of such Bidder as Damages on account of failure of the Selected Bidder to submit the Security Deposit.
- 4.3.4 After acknowledgement of the LOI and submission of Security Deposit as aforesaid by the Selected Bidder, it shall cause the Selected Bidder to execute the Agreement preferably within a period of twenty one (21) days from the issuance of LOI or as

prescribed by IREL. The Selected Bidder shall not be entitled to seek any deviation, modification or amendment in the Agreement.

5 Miscellaneous

5.1 General

- 5.1.1 The Bidding Process shall be governed by, and construed in accordance with, the laws of India and the court in Nagercoil, Kanyakumari District, Tamil Nadu, shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the Bidding Process.
- 5.1.2 IREL, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to;
- a. suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;
 - b. consult with any Bidder in order to receive clarification or further information;
 - c. qualify or not to qualify any Bidder and/ or to consult with any Bidder in order to receive clarification or further information;
 - d. retain any information and/ or evidence submitted to IREL by, on behalf of, and/ or in relation to any Bidder; and/ or
 - e. independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Bidder
- 5.1.3 It shall be deemed that by submitting the Bid, the Bidder agrees and releases IREL, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder and the Bidding Documents, pursuant hereto, and/ or in connection with the Bidding Process, to the fullest extent permitted by applicable law, and waives any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.

5.2 Proprietary data

- 5.2.1 All documents and other information supplied by IREL or submitted by a Bidder to IREL shall remain or become the property of IREL. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. IREL will have the right not to return any Bid or any information provided along therewith.

5.3 Contacts during Bid Evaluation

- 5.3.1 Bids shall be deemed to be under consideration immediately after they are opened and until such time IREL makes official intimation of award/ rejection to the Bidders. While the Bids are under consideration, Bidders and/ or their representatives or other interested parties are advised to refrain, save and except as required under the Bidding

Documents, from contacting by any means, IREL and/ or their employees/ representatives on matters related to the Bids under consideration.

5.4 Correspondence with the Bidder

- 5.4.1 Save and except as provided in this RFP, IREL shall not entertain any correspondence with any Bidder in relation to the acceptance or rejection of any Bid;

5.5 Preference to Make in India

- 5.5.1 For this procurement, Public Procurement (Preference to Make in India) Order 2017 dated 15.06.2017, 28.05.2018 & 29.05.2019 and subsequent Orders issued by the respective Nodal Ministry shall be applicable. The bidder to provide certificate for minimum 50% and 20% local content required for qualifying Class 1 and Class 2 Local Supplier respectively
- 5.5.2 The Public Procurement (Preference to Make in India) PPP_MII order 2017 wrt prescribed local content is applicable for procurement of all good, service and works

Appendix

Appendix 1

Letter comprising the Bid

Dated:

To:

Subject: Bid for ----- project

Dear Sir,

1. With reference to your RFP document dated *****, I/we, having examined the Bidding Documents and understood their contents, hereby submit my/our Bid for the aforesaid Project. The Bid is unconditional and unqualified.
2. All information provided in the Bid and in the Appendices is true and correct.
3. This statement is made for the express purpose of qualifying as a Bidder for the development and construction of the aforesaid Project.
4. I/ We shall make available to IREL any additional information it may find necessary or require to supplement or authenticate the Bid.
5. I/ We acknowledge the right of IREL to reject our Bid without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. We certify that in the last three years, we have never failed to perform on any contract, as evidenced by imposition of a penalty or a judicial pronouncement or arbitration award, nor been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/ We declare that:
 - a. I/ We have examined and have no reservations to the Bidding Documents, including any Addendum issued by IREL.
 - b. I/ We do not have any conflict of interest in accordance with the RFP document.
 - c. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the RFP document, in respect of any tender or request for proposal issued by or any agreement entered into with IREL or any other public sector enterprise or any Government, Central or State; and
 - d. I/ We hereby certify that we have taken steps to ensure that in conformity with the provisions of Clause 2.15 of the RFP, no person acting for us or on our behalf

has engaged or will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I/ We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Bid that you may receive nor to invite the Bidders to Bid for the Project, without incurring any liability to the Bidders.
9. I/ We believe that I/we satisfy the Eligibility requirements as specified in Clause 2.3 of the RFP document and are/ is qualified to submit a Bid.
10. I/ We certify that in regard to matters other than security and integrity of the country, we have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of the community.
11. I/ We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
12. I/ We further certify that no investigation by a regulatory authority is pending either against us or against our Associates or against our CEO or any of our Directors/Managers/ employees.
13. I/ We undertake that in case due to any change in facts or circumstances during the Bidding Process, we are attracted by the provisions of ineligibility in terms of the provision of the RFP, we shall intimate IREL of the same immediately.
14. I/We acknowledge and agree that in the event of a change in control of an Associate whose Technical Capacity or Financial Capacity was taken into consideration for the purposes of short-listing and qualification under and in accordance with the RFP, I/We shall inform IREL forthwith along with all relevant particulars and IREL may, in its sole discretion, disqualify us or withdraw the Letter of Intent, as the case may be.
15. I/We further acknowledge and agree that in the event such change in control occurs after signing of the Agreement but prior to Commencement Date of the Project, it would, notwithstanding anything to the contrary contained in the Agreement, be deemed a breach thereof, and the Agreement shall be liable to be terminated without IREL being liable to us in any manner whatsoever.
16. I/We hereby irrevocably waive any right which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by IREL in connection with the selection of the Bidder, or in connection with the Bidding Process itself, in respect of the above mentioned Project and the terms and implementation thereof.
17. In the event of my/ our being declared as the Selected Bidder, I/We agree to enter into an Agreement in accordance with the draft that has been provided to me/us prior to the Bid Due Date. We agree not to seek any changes in the aforesaid draft and agree to abide by the same.

18. I/We have studied all the Bidding Documents carefully and also surveyed the Project. We understand that except to the extent as expressly set-forth in the Agreement, we shall have no claim, right or title arising out of any documents or information provided to us by IREL or in respect of any matter arising out of or concerning or relating to the Bidding Process including the award of Project.
19. The Price Bid has been quoted by me/us after taking into consideration all the terms and conditions stated in the RFP, draft Agreement, our own estimates of costs and after a careful assessment of the site and all the conditions that may affect the Bid.
20. I/We confirm supply of commissioning spares required for all equipment; all special tools and tackles required for erection, testing and successful commissioning of the proposed plants/ circuits, consumables and initial fill (if applicable) and one year spares required for operation and maintenance of the plant/ circuits. The price of the same is included in Price Bid.
21. I/We offer a Bid Security of Rs. _____ (Rupees _____ only) to IREL in accordance with the RFP Document.
22. The Bid Security in the form of a Bank Guarantee (strike out whichever is not applicable) is attached.
23. I/We agree and understand that the Bid is subject to the provisions of the Bidding Documents. In no case, I/We shall have any claim or right of whatsoever nature if the Project is not awarded to me/us or our Bid is not opened.
24. I/We hereby submit our Bid for undertaking the aforesaid Project in accordance with the Bidding Documents and the Agreement.
25. I/We agree to keep this Bid valid for 120 (one hundred and twenty) days from the Bid Due Date specified in the RFP.
26. I/We agree and undertake to abide by all the terms and conditions of the RFP document.

In witness thereof, I/we submit this Bid under and in accordance with the terms of the RFP document.

Yours faithfully,

(Signature of the Authorized signatory)

(Name and designation of the of the Authorized signatory)

Name and seal of Bidder

Date:

Place:

Annex-I to Appendix-1 – Particulars of Bidder**Particulars of the Bidder**

S. No.	Particulars	Details
1.	Name of Bidder's entity	
2.	Country of origin	
3.	Legal Status	
4.	Registration number of the Company (under relevant Act of the Country)	
5.	a) Postal address of the Registered office b) Telephone no.(s) c) Fax no(s) d) Web Site, e-mail, if any e) Address of Regional / Local Office, if any	
6.	Brief description of the Bidder including details of its main lines of business and proposed role and responsibilities in this Project	
7.	a) Name of the authorized representative b) Designation c) Postal address d) Telephone no.(s) e) Fax no(s) f) E-mail	
8.	Permanent Account No. (PAN), if applicable	
9.	GSTIN number in India, if applicable	
10.	Whether the Bidder is from the country where as a matter of law or official regulations, the commercial relation with India is prohibited	
11.	Any other information	

12. The following information shall also be provided for the Bidder:

Name of Bidder:

S. No.	Criteria	Yes	No
1	Has the Bidder been barred by the Central/ State Government/Public Sector Undertaking (PSUs), or any entity controlled by it, from participating in any project (EPC or otherwise)?		
2	If the answer to 1 is yes, does the bar subsist as on the Bid Due Date?		

Signature of Authorised Signatory with seal

Name, Designation, Date, Place

Note: In case of consortium, the above information needs to be provided for each consortium member.

Annex-II to Appendix-1 – Technical Capacity of Bidder

Details of project for Technical Eligibility

(Refer Clause 2.33)

Name of Project:

Name of Bidder:

Title/Name of project		Documentary Proof for verification
Assignment Name:		
Country:		
Location within Country:		
Type of project, capacity, technology and process details		
Name of Client:		
Address of the Client:		
Date of commencement of the Project/ contract		
Date of completion/ commissioning of the project		
Equity shareholding (with period during which equity was held), In case a particular job/ contract has been jointly executed by the Bidder.		
Name of consortium members (if applicable) and equity shareholding for the project		
Details of commercial operation of the project with present status:		

Signature of Authorized Signatory with seal

Name, Designation, Date, Place

Notes:

- Use separate sheet for each Project.
- The Applicant may attach proofs on separate sheets as mentioned in the RFP.

Mention the supporting document such as LOA/ Work Order/ Completion Certificate indicating scope of work and other details as indicated in the RFP. Kindly indicate the page reference nos. for easy identification/ traceability.

Format for Certificate from practicing chartered accountant for Eligibility projects

Certificate from the practicing chartered accountant

Based on its books of accounts and other published information authenticated by it, this is to certify that (name of the Bidder/Associate) was engaged by (title of project company) for (name of project).

The total fees received by the Bidder for the projects is

We further certify that the project was completed on (date). The operations of the project commenced on (date) and the project has been operational for a period of (years) from (date) to (date) prior to the Bid Due Date of the said RFP.

Name of the audit firm:

Seal of the audit firm:

Date:

License/registration no:

(Signature, name, designation of the authorized signatory of the audit firm)

Annex-III to Appendix-1 – Financial Capacity of Bidder

Financial Capacity of the Bidder

Name of Bidder:

Net-worth of the Bidder

Net-worth of the Bidder As per last Financial Year's audited financial statements dated _____ Currency _____	_____ (in figures)	_____ (in words)
--	-----------------------	---------------------

Turnover of the Bidder

Turnover of the Bidder	In figures	In words
FY 2023-24		
FY 2022-23		
FY 2021-22		
Average		

Signature of Authorised Signatory with seal

Name, Designation, Date, Place

Note:

- The Bidders will provide all necessary documents in support of the financial strength including audited financial statements and certificate from practicing chartered accountant.
- For the purpose of conversion of foreign currency, the provisions of Clause 2.4.9 of the RFP will prevail.
- In case of Bidder taking support of Associate to meet the financial criteria, the above information for the Bidder as well as its Associate will be provided with documentary proof for both.

Annex-IV to Appendix-1 – Statement of Legal Capacity

Statement of Legal Capacity

(To be forwarded on the letterhead of the Applicant)

Ref.

Date.

To,

.....

.....

Dear Sir,

We hereby confirm that we satisfy the terms and conditions laid out in the RFP document.

We have agreed that (insert individual's name) will act as our representative and has been duly authorized to submit the RFP. Further, the authorised signatory is vested with requisite powers to furnish such letter and authenticate the same.

Thanking you,

Yours faithfully,

(Signature, name and designation of the authorised signatory)

For and on behalf of.....

\$ Please strike out whichever is not applicable

Appendix 2 – FORMAT OF BANK GUARANTEE FOR BID SECURITY

Bank Guarantee for Bid Security

B.G. No. _____

Dated _____

In accordance with RFP No. _____ Dated _____ for the work of _____ (herein after referred to as "the said Works"), under _____ (Corporate Office) of M/s IREL (India) Limited, a company incorporated under Indian Companies Act, having its registered office at Plot No.1207, ECIL building, Opp. to Siddhivinayak Temple, Veer Savarkar Marg, Prabhadevi, Mumbai – 400028, India (herein after referred to as "IREL"), M/s _____ Address _____ [Herein after referred to as Bidder (s)] wish /wishes to participate in the said tender and a Bank Guarantee for the sum of Rs. _____ (in words) valid for a period of _____ days (in words) is required to be submitted by the Bidder towards the Bid Security.

We the _____ Bank (hereinafter called the said Bank) do hereby undertake to pay to IREL, the sum of Rs. _____ (Rupees _____ only) by reason of the said Bidder's failure to enter into an agreement of contract on intimation of acceptance of his Bid and/or to commence the works and/or failure to deposit the security deposit within the stipulated period as per the terms and conditions relating to and/or governing the contract and/or specified in the RFP. We also agree that any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. We also agree that notwithstanding any dispute or difference or any litigation in respect of or arising from the said contract and/or the acceptance of the Bid of the Bidder afore stated by IREL including the question as to the tenability of the claim of IREL for forfeiting the Bid Security being the Bank Guarantee herein, we shall forthwith pay the said amount to IREL on demand being made as aforesaid.

We _____ Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for entering into an Agreement of contract and that it shall continue to be enforceable till all the dues of IREL under the terms and conditions of the RFP for the work have been fully paid and its claims satisfied or discharged or till IREL certifies, that the terms and conditions of the RFP have been fully and properly carried out by the said Bidder and accordingly discharges the guarantee.

We _____ Bank further agree with IREL that IREL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the RFP and/or terms and conditions governing the Agreement or to extend the time of validity of the Bid from the said Bidder from time to time or to postpone for any time or from time to time any of the powers exercisable by IREL against the said tenderer and to forbear or enforce any of the terms and conditions of the RFP and we shall not be relieved from our liability hereunder by reason of any such variation, or extension being granted to the said Bidder or for any forbearance, act or omission on the part of IREL or any indulgence by IREL to the said Bidder or by any such matter or thing whatsoever which under the law relating to surety/guarantee would but for this provision have effect of so relieving us.

We _____ Bank do hereby further agree that any change in the Constitution of the said Bidder or the Bank will not affect the validity of this guarantee.

We _____ Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of IREL in writing.

Dated the _____ day of _____ 2025

_____ Bank

(Signature with name in Block letters with designation,

Attorney as per power of Attorney No. _____ dt. _____)

Bank's Common seal

Appendix 3 – FORMAT FOR POWER OF ATTORNEY FOR SIGNING OF BID

Power of Attorney for signing of Bid

Know all men by these presents, We, _____ (name of the Bidder and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorize Mr. / Ms (Name), son/daughter/wife of _____ and presently residing at _____, who is [presently employed with us and holding the position of _____], as our true and lawful attorney (hereinafter referred to as the "**Attorney**") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our bid for the "Selection of Agency for Installation of De-sliming system at HUS, IREL-MK, Tamil Nadu on EPC Basis" proposed or being developed by the IREL (India) Limited (the "IREL") including but not limited to signing and submission of all applications, bids and other documents and writings, participate in bidders' and other conferences and providing information / responses to IREL, representing us in all matters before IREL, signing and execution of all contracts including the Agreement and undertakings consequent to acceptance of our Bid, and generally dealing with IREL in all matters in connection with or relating to or arising out of our Bid for the said Project and/or upon award thereof to us and/or till the entering into of the Agreement with IREL.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, _____, THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS _____ DAY OF _____, 20**.

For _____

(Signature)

(Name, Title and Address)

Witnesses:

1.

2.

Accepted

[Notarized]

(Signature)

(Name, Title and Address of the Attorney)

Notes:

- The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the

executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.

- Also, wherever required, the Bidder should submit for verification the extract of the charter documents and documents such as a resolution/power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder.
- For a Power of Attorney executed and issued overseas, the document will also have to be legalized by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney is being issued.

Appendix 4 – FORMAT FOR SECRECY AGREEMENT

Secrecy Agreement to be executed on a Non-Judiciary Stamp paper of Rs.200/- (Rupees Two Hundred only).

SECRECY AGREEMENT

THIS AGREEMENT, made and entered into this ____th day of, 20- - by and between IREL (India) Limited, a company incorporated under Indian Companies Act having its registered office at Plot No.1207, Opp. to Siddhivinayak Temple, Veer Savarkar Marg, Prabhadevi, Mumbai – 400 028, India (hereinafter called "IREL") on one part and, a company duly incorporated under....., with its registered office..... (hereinafter called _____) includes its successors and permitted assigns, on the other part.

WITNESSETH:

WHEREAS:

WHEREAS, IREL intends to carry out installation of De-sliming system at HUS, IREL-MK, Tamil Nadu.

WHEREAS,_____ [Bidder] had participated in the RFP and now will be providing EPC services to IREL for installation of De-sliming system at HUS, IREL-MK, Tamil Nadu.

NOW, THEREFORE, in consideration of the premises and the mutual covenants herein contained, the parties hereto agree as follows:

- 1 The term "Confidential Information" means:
 - 1) All details supplied by IREL on technical, commercial and other information and data on the Process.
 - 2) All details supplied by IREL on technical, commercial and other information and data relating to the products.
2. Each party hereto shall keep secret and confidential any and all confidential information it receives from any other party or parties hereto under this Agreement, and shall not use such Confidential Information for any purposes except for the said tender purpose hereunder. The obligations under this Article shall not apply to any information or data that:
 - i. at the time of its disclosure hereunder is in the public domain,
 - ii. after disclosure hereunder becomes part of the public domain by publication or otherwise through no fault of the party to whom such information or data is disclosed hereunder ("Receiving party") (but only after it is published or otherwise becomes part of the public domain),
 - iii. the Receiving Party can show in its possession at the time of disclosure hereunder and which the Receiving party, without breach or any obligation is free to disclose to others, or

- iv. was received by the Receiving Party after the time of disclosure by a party hereto ("Disclosing Party") hereunder from a third party who did not acquire it, directly or indirectly, from the Disclosing Party under an obligation of confidence and which the Receiving party, without breach of any obligation, is free to disclose to others.

For the purpose of this Article 2, information or data which is specific, e.g., those on operating conditions or equipment, shall not be deemed to be within the foregoing exceptions merely because it is embraced by general information or data in the public domain or in the possession of Receiving Party. In addition, any combination of features shall not be deemed to be within the foregoing exceptions merely because individual features are in the public domain or in the possession of the Receiving Party, but only if the combination itself and its principle of operation are in the public domain or in the possession of the Receiving Party.

3. The Receiving Party shall limit the access to the Confidential Information received hereunder to its directors, officers and employees, who (i) need to have access with such Confidential Information, (ii) have been informed of the confidential nature thereof and (iii) have agreed to undertake the obligations of non-disclosure and non-use of such Confidential Information.
4. Upon request of IREL, (name of the party) shall, free of charge, promptly return to IREL all the Confidential information received from IREL hereunder.
5. Each party hereto shall not, without the other party's prior express written consents, disclose or allow the disclosure of the existence of this Agreement.
6. It is mutually understood and agreed that no license or other rights are granted to any party hereto under this Agreement, by implication or otherwise, for any of the patents or patents applications of any other party hereto or as to any information and data disclosed by any other party or parties hereto under this Agreement.
7. None of the parties may assign its rights or obligations hereunder without the prior written consent of the other parties.
8. The obligation of non-disclosure and non-use of the Confidential information under this Agreement shall remain in effect for five (5) years after the date hereof and shall terminate upon lapse of said five (5) years.
9. This Agreement shall be governed by and construed in accordance with Indian laws.
10. Each party hereto acknowledges and agrees that monetary damages for any breach or threat of breach of this Agreement are inadequate. Each party hereto shall, therefore, be entitled to seek and obtain temporary and injunctive relief for any breach or threat of breach of this Agreement relating to its Confidential Information, in addition to any other remedy.
11. **IN WITNESS WHEREOF**, the parties hereto have caused this Agreement to be executed in duplicate by their duly authorized representatives on the day and year first above written. The original shall remain with IREL and the duplicate with (name of the party).

1. For _____
(Name)
Designation

Witness:

1. (Name)
Designation

2. (Name)
Designation

2. For IREL (India) Limited
(Name)
Designation

Witness:

1. (Name)
Designation

2. (Name)
Designation

Appendix 5 – SITE VISIT REQUEST FORM

(This Site Visit Request Form shall be submitted duly signed by authorised signatory on Bidder's letter head, at least one week prior to the proposed site visit date)

SITE VISIT REQUEST FORM

I/We(Bidder or Associate members name) wish to participate in the RFP for selection of Agency for installation of De-sliming System at HUS, IREL-MK, Tamil Nadu on EPC Basis. For the same, as prescribed in the said RFP document, I/We propose following team member(s):

- (1) Name, Designation and Company of the Team Leader
- (2) Name, Designation and Company of the Team Member
- (3) Name, Designation and Company of the Team Member
- (4) Name, Designation and Company of the Team Member

for the Site Visit to REP Site to understand the site conditions, and acquaint myself/ ourselves with atmosphere prevalent therein on(Proposed Site Visit date).

Seal of the Company:

Signature of the Bidder:

Name:

Designation:

Note:

- a) Maximum four (4) member team can be proposed for site visit from a Bidding entity.
- b) In case Team Leader and/ or Team Member are not nationals of India, the Bidder shall submit details of such member (proposed for Site Visit) as per Annex-1 of Appendix-5 along with this Site Visit Request Form.
- c) The Request form for site visit of foreign officials shall be submitted at least fifteen (15) days before the scheduled site visit date.
- d) Only formal written requests, duly received by IREL within the specified time shall be considered.
- e) IREL reserves the right to alter or change the date of the Site Visit
- f) IREL shall not be liable to reimburse to any Bidder any costs/expenses incurred by its team member(s) in connection with any such alteration in date or time, or withdrawal of

request.

- g) The team member(s) of the interested Bidders will be accompanied by representative(s) of IREL.
- h) The interested Bidders shall ensure that it's all team members adopt best safety practices and adhere to all safety standards, including the required protective gear, during the Site Visit.
- i) The interested Bidder having any query of reasonable relevance arising from the Project Site Visit and study, may discuss the same during the Pre-bid Conference or send a formal written query to IREL.
- j) Interested Bidders shall take full responsibility for their respective members. If any member of the team of an interested Bidder displays any untoward behaviour or refuses to follow the guidelines or the reasonable instructions issued by IREL, IREL reserves the right to cause the removal of such member from the Project Site and also forfeit the privilege of the interested Bidder to conduct another Site Visit.
- k) The Team Leader of the Site Visit Team shall be responsible for:
 - a. ensuring proper conduct of team members;
 - b. liaising with IREL or its staff for any inputs/ instructions during Site Visit; and
 - c. resolving any issues which may arise during the course of the Site Visit.
- l) It should be noted that all data/information (oral or written) that the interested Bidders and the members of the Site Visit Team may learn or come across during the Project Site Visit and study shall be treated as Confidential Information and should not be disclosed or shared with any third party.
- m) Each interested Bidder shall bear the costs and expenses incurred by its Survey Team during the Project Site Survey.
- n) IREL shall not be liable, in any manner whatsoever, for any loss, expense, injury or damage suffered or likely to be borne by the interested Bidder or any of its member or representative, as a consequence of their entry to, access to or presence at the Project Site during the Site Visit.
- o) Each interested Bidder shall, upon the completion of the Project Site Visit, confirm in writing was it was accorded a fair opportunity to have full access to the Project Site.
- p) Each interested Bidder shall conduct the site visit responsibly to ascertain and familiarize themselves with the Project Site and associated factors required to give Bid.
- q) A Site Visit Team, who fails to comply with these guidelines or cooperate with any reasonable request made by a designated officer of IREL may be denied further access to the Project Site, and Pre-bid Conference with IREL.

Annex-I to Appendix 5 – Details of Foreign Officials

Details of Foreign Officials proposed for Site Visit

Reference No. and date of RFP	Name of the Visitor	Passport No.	Nationality	Name and address of present Employer	Details of facilities proposed to be visited	Period of visit (exact dates of the visit)	Start date of visit (dd/mm/yy)	End date of visit (dd/mm/yy)	Purpose of visit

Appendix 6 – FORMAT FOR SITE VISIT CERTIFICATE

DECLARATION OF SITE VISIT

(To be submitted along with the Bid)

I, hereby, declare that I have visited the site to understand the site conditions, and acquainted myself with atmosphere prevalent therein. I have also understood the extent of total works involved for this package.

Seal of the Company:

Seal of IREL:

Signature of the Bidder:

Signature of IREL Technical Person Head:

Name:

Name:

Designation:

Designation:

Signature of IREL Security Person:

Name:

Designation:

Note: The Bidder shall carry a signed and stamped print out in duplicate of this Site Visit Declaration on Company letter head. The same shall be attested and signed by accompanying Technical Person and Security Person of IREL during site visit.

Appendix 7 – FORMAT OF INTEGRITY PACT

Pre Contract Integrity Pact

General

This pre-bid pre-contract Agreement (hereinafter the Integrity Pact) is made on day of the month of year between IREL (India) Limited (hereinafter called the "IREL" which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s. (hereinafter called the "Bidder" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS IREL proposes to select an Agency for installation of De-sliming system at HUS, IREL-MK on EPC Basis and the Bidder is willing to offer/ has offered the services and

WHEREAS the Bidder is a private company / public company / Government undertaking / partnership / registered export agency, constituted in accordance with the relevant law in the matter and IREL is a PSU.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence / prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:-

Enabling IREL to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary Impact of corruption on public procurement, and

Enabling Bidders to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and IREL will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The Parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

1. Commitments of IREL

1.1. IREL undertakes that no official of IREL, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immediate benefit or any other advantage from the Bidder, either for themselves or for any person, organization or third party to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

1.2. IREL will, during the pre-contract stage, treat all Bidders alike, and will provide to

all Bidders the same information and will not provide any such information to any particular Bidder which could afford an advantage to that particular Bidder in comparison to other Bidders.

1.3. All the officials of IREL will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

2. In case any such preceding misconduct on the part of such official(s) is reported by the Bidder to IREL with full and verifiable facts and the same is prima facie found to be correct by IREL, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by IREL and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by IREL the proceedings under the contract would not be stalled.

3. Commitments of Bidders

The Bidder commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the followings:-

- 3.1. The Bidder will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of IREL, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
- 3.2. The Bidder further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of IREL or otherwise in procuring the contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract for showing or forbearing to show favour or disfavor to any person in relation to the contract or any other contract.
- 3.3. The Bidder further confirms and declares to IREL that the Bidder has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to IREL or any of its functionaries, whether officially or unofficially to the award of the contract to the Bidder, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 3.4. The Bidder, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of IREL or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of

services agreed upon for such payments.

- 3.5. The Bidder will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.6. The Bidder will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.7. The Bidder shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by IREL as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The Bidder also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.8. The Bidder commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.9. The Bidder shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.10. If the Bidder or any employee of the Bidder or any person acting on behalf of the Bidder, either directly or indirectly, is a relative of any of the officers of IREL, or alternatively, if any relative of an officer of IREL has financial interest/stake in the Bidder's firm, the same shall be disclosed by the Bidder at the time of fill of tender. The term 'relative' for this purpose would be as defined in Section 6 of the Companies Act 1956.
- 3.11. The Bidder shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of IREL.

4. Previous Transgression

- 4.1. The Bidder declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify Bidder's exclusion from the tender process.
- 4.2. The Bidder agrees that if it makes incorrect statement on this subject, Bidder can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Bid Security

- 5.1. While submitting the Bid, the Bidder shall deposit an amount _____ (as specified in RFP) as Bid Security, with IREL through any of the following instruments:
 - 5.1.1. Bank Draft or a Pay order in favour of IREL (India) Limited, payable at Manavalakurichi.
 - 5.1.2. A confirmed guarantee by an Indian Scheduled Bank, as applicable,

promising payment of the guaranteed sum to IREL on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by IREL shall be treated as conclusive proof of payment.

5.2. The Bid Security shall be valid upto complete conclusion of the contractual obligations to the complete satisfaction of both the Bidder and IREL.

5.3. In case of the successful Bidder, a Clause would also be incorporated in the article pertaining to Security Deposit in the contract that the provisions of Sanctions for Violation shall be applicable for forfeiture of Security Deposit in case of a decision by IREL to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

5.4. No interest shall be payable by IREL to the Bidder on Bid Security for the period of its currency.

6. Sanctions for Violations

6.1. Any breach of the aforesaid provisions by the Bidder or any one employed by it or acting on its behalf (whether with or without the knowledge of the Bidder) shall entitle IREL to take all or any one of the followings actions, wherever required:-

6.1.1. To immediately call off the pre contract negotiations without assigning any reason or giving any compensation to the Bidder. However, the proceedings with the other Bidder(s) would continue.

6.1.2. The Bid Security / Security Deposit (after the Agreement is signed) shall stand forfeited either fully or partially, as decided by IREL and IREL shall not be required to assign any reason therefore.

6.1.3. To immediately cancel the Agreement, if already signed, without giving any compensation to the Bidder.

6.1.4. To recover all sums already paid by IREL, and in case of an Indian Bidder with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of Bidder from a country other than India with interest thereon at 2% higher the LIBOR. If any outstanding payment is due to the Bidder from IREL in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

6.1.5. To encash the Security Deposit, if furnished by the Bidder, in order to recover the payments, already made by IREL, along with interest.

6.1.6. To cancel all or any other contracts with Bidder. The Bidder shall be liable to pay compensation for any loss or damage to IREL resulting from such cancellation / rescission and IREL shall be entitled to deduct the amount so payable from the money(s) due to the Bidder.

6.1.7. To debar the Bidder from participating in future bidding processes of IREL (India) Limited for a minimum period of five years, which may be further

extended at the discretion of IREL.

6.1.8. To recover all sums paid in violation of this Pact by Bidder(s) to any middleman or agent or broker with a view to securing the contract.

6.1.9. In cases where irrevocable Letters of Credit have been received in respect of any contract signed by IREL with the Bidder, the same shall not be opened.

6.1.10. Forfeiture of Bid Security/Security Deposit in case of a decision by IREL to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

6.2. IREL will be entitled to take all or any of the actions mentioned at Para 6.1 (i) to (x) of this Pact also on the commission by the Bidder or any one employed by it or acting on its behalf (whether with or without the knowledge of the Bidder), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

6.3. The decision of IREL to the effect that a breach of the provisions of this Pact has been committed by the Bidder shall be final and conclusive on the Bidder. However, the Bidder can approach the Independent Monitor(s) appointed for the purposes of this Pact.

7. Independent Monitor(s)

7.1. IREL has appointed Independent Monitor(s) (hereinafter referred to as Monitors) for this Pact.

Shri Rais Ahmed, IOFS (Retd.),
Plot No.65, 1st Floor, Pocket 1,
Behind Apollo Hospital, Jasola,
New Delhi-110025,
Mobile: 9910007239, Email: ahmadrais@gmail.com

7.2. The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

7.3. The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

7.4. Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.

7.5. As soon as the Monitors notices, or have reason to believe, a violation of this Pact, they will so inform the Authority designated by IREL.

7.6. The Bidder(s) accepts that the Monitors has the right to access without restriction to all Project documentation of IREL including that provided by the Bidder. The Bidder will also grant the Monitors, upon its request and demonstration of a valid interest, unrestricted and unconditional access to its project documentation. The same is applicable to Subcontractors. The Monitors shall be under contractual obligation to treat the information and documents of the Bidder/Subcontractor(s) with confidentiality.

7.7. IREL will provide to the Monitors sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitors the option to participate in such meetings.

7.8. The Monitor will submit a written report to the designated Authority of IREL with 8 to 10 weeks from the date of reference or intimation to him by IREL/Bidder and, should the occasion arise, submit proposals for correcting problematic situations.

8. Facilitation of Investigation

In case of any allegation of violation of any provision of this Pact or payment of commission, IREL or its agencies shall be entitled to examine all the documents including the Books of Accounts of the Bidder and the Bidder shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

9. Law and Place of Jurisdiction

This pact is subject to Indian Law. The place of performance and jurisdiction is the seat of IREL.

10. Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

11. Validity

11.1. The validity of this Integrity Pact shall be from date of its signing and upto the complete execution of the contract to the satisfaction of both IREL and the Bidder, including warranty period, whichever is later. In case Bidder is unsuccessful, this Integrity Pact shall expire after six months from the date of signing of the contract.

11.2. Should one or several provisions of this Pact turn out to be invalid, the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions

12. The Parties hereby sign this Integrity Pact at _____ on _____.

IREL

Bidder

Signature

Name of Officer

Designation

Witness

1

2

Witness

1

2

Appendix 8 – PAYMENT TERM

- 1.1. The Agency shall raise an invoice for each of the Project Milestone completed as per master network and in accordance with Billing Schedule, and shall submit the same to IREL in accordance with Clause mentioned below;
- 1.2. Each bill/ invoice shall state the amount billed and be accompanied with progress report for each milestone and any other supporting documents as required and finalised with IREL.
- 1.3. The Agency shall reimburse IREL all costs, charges, damages or expenses which IREL may have paid or incurred, if and to the extent to which the Agency is liable under this Agreement to pay upon written request of the Engineer-in-Charge, failing which such costs, charges, damages or expenses shall be deducted by IREL from any money due or becoming due by IREL to the Agency under this Agreement or any other Agreement failing which such amounts shall be considered as debt from the Agency to IREL and shall be recoverable accordingly.
- 1.4. Agency shall validate the given flow sheet and if modification is required, it will be tested as per tender and same needs to be approved by IREL. **Payment of 5% of total Price Schedule will be released for finalizing flow sheet after the same is accepted and approved by IREL.**
- 1.5. Payment of **five percent (5%) of Price Schedule shall be released on submission of detail design & engineering data** (*to be finalized during technical discussion*) for the facility of the De-sliming system, and accepted by IREL.
- 1.6. Payment of **sixty percent (60%) of Price Schedule shall be released towards progressive payments for Supply of Plant & Equipment and building steel.** Invoicing for progress payments will be made in RA Bills with minimum value of each bill to be INR 2 Crore or as per the billing schedule to be submitted by the Successful Bidder against milestones to be mutually discussed and approved by IREL
- 1.7. Payment **of ten percent (10%) of Price Schedule shall be released upon completion of Erection of Plant & Equipment and building Steel structures.**
- 1.8. Payment of **fifteen percent (15%) of Price Schedule shall be released upon completion of Commissioning & PG Test and supply of O & M spares.**
- 1.9. Payment of **five percent (5%) of Price Schedule shall be released upon issue of the Final Acceptance Certificate.**
- 1.10. Ninety percent (90%) of the payment, towards each invoice raised, and 100% of payment of taxes and duties on submission of documentary evidence, shall be made by IREL within thirty (30) days after verification of the documents submitted by the Agency and by conducting physical inspection of the site as mentioned in the documents submitted with the invoice.
- 1.11. Liquidated Damages to be deducted shall be adjusted in the current invoice or next following invoice raised, as may be applicable;

- 1.12. All interim payments as per Clause 1.6 shall be regarded as progress payments against the final payment only and not as payment for Works completed and shall not preclude defective / imperfect / incomplete facilities to be removed. It will not be considered as an admission by IREL of the due performance of the Agreement, or any part thereof by the Agency nor shall it preclude, determine or affect in any way the powers of IREL under these conditions or in any way vary or affect the Agreement
- 1.13. The remaining ten percent (10%) payment for each Project Milestone (the "Retention Money") shall be made after issuance of "Final Acceptance Certificate" by IREL and submission of Performance Bank Guarantee, as per the format attached in Annexure-II of Draft Agreement by the Agency from any scheduled bank of India in accordance with the terms and conditions mentioned in this Agreement;

Liquidated Damages

- 1.14. In case of delay in achieving Works Completion Date, Liquidated Damages as mentioned below shall be applicable.
- 1.15. Liquidated Damages (LD) against delay in achieving Works Completion Date.
 - 1.15.1. Liquidated Damages (LD) shall be levied where reasons are attributable to Agency for delays in execution of this Agreement. LD shall be levied @0.5% per week or part thereof on the Agreement Value for each week of delay in achieving Works Completion Date; subject to a maximum of 10% of the total Agreement Value.

Appendix 9 – FORMAT FOR PRICE BID

Format for Price Bid

Name of Project:

Name of Bidder:

IREL shall pay the Bidder Lump Sum (LS) basis as below:

Price Schedule – (Package Lump Sum (LS) Charges)

Sl. No.	Particulars	Unit	Value in INR
1	Fees for validation/ Development of flow sheet, Design & Engineering, Supply & erection of Equipment as per billing schedule, installation & commissioning, performance test, operation & maintenance assistance and final acceptance of de-sliming system with supply of O & M spares <i>NB: The bidder has to submit a list of O & M spares of equipment with quantity & rate along with bid document.</i>	LS	
2	GST charges		
3	Total Price		

Total Price with Taxes (in words):

Indian Currency (in words):

Signature and Seal of Bidder

Name

Designation

Date

Place

Notes:

- The Bidder will be required to submit detailed BOQ (for facilitation of payment) corresponding to the value for supply of material (including Supply of equipment, technological structures and other utilities for the Project, building steel structures and

civil work related supplies) as per format given in Appendix 9.a.

- b) In case certain items are missed out in the BOQ, it shall not resolve the Bidder of any of its responsibilities under the Agreement. The Bidder will be responsible to complete the entire scope of work as brought out in the RFP and Agreement without any price addition.
- c) Only the lump sum price total quoted along with various taxes and levies will be considered for comparison between various bidders. Break up for detailing if any, will not be considered for comparison.
- d) The price quoted shall remain firm during the execution period of the contract. No requests for change of price will be allowed for whatsoever reasons. The final billing schedule shall be finalized on mutual discussion between IREL and the successful bidder.
- e) In case of difference in amount in words and figures, amount in words will prevail.
- f) In case the Price Bid is not as per the format and directions provided in the RFP, the same shall be termed as non-responsive and shall be liable for rejection by IREL and shall result in forfeiture of the Bid Security.
- g) In case any conditional Price Bid is submitted by the Bidder, IREL shall have the right to reject the Price Bid and forfeit the Bid Security.
- h) The fees and Tax should be mentioned separately as indicated in the price bid structure. In case any amount towards tax is not mentioned, then the price quoted will be considered taking the fees inclusive of tax into consideration.

Appendix 9.a – FORMAT of BOQ FOR EQUIPMENT AND TECHNOLOGICAL STRUCTURES

Name of items/ facilities

Sr. No.	Description	Weight (t)	Unit	Quantity	Basic Price (in INR)	GST	Total FOR price
	Supply of Equipment						
1	Mechanical Equipment including technological structures						
a							
b							
2	Electrical Equipment						
a							
b							
3	Instrumentation, Automation, cabling etc.						
4	Others incl. Commissioning Spares, Special Tools & Tackles, Initial Fills etc.						
5	Civil & Structures						
6	O & M Spares						
	Sub Total						
7	Inland Freight						
	Total						
	Total price (in words)						

Signature and Seal of Bidder

Name

Designation

Date

Place

Appendix 10 – CHECK LIST

Check list for Submission of Bid:

S. No.	Details of Document	Remarks (Applicable/ Not applicable Attached/ Not attached) If not attached, reasons to be given.
Techno-Commercial Bid		
1	Letter comprising the Bid along with particulars of Bidder in Annex-I of Appendix-1	
2	Technical Capacity of the Bidder as per Annex-II of Appendix 1	
3	Financial Capacity of the Bidder as per Annex- III of Appendix 1	
4	Statement of Legal Capacity as per Annex- IV of Appendix 1	
5	Bid Security	
6	Power of Attorney(s) as per format given in Appendix 3 of RFP	
7	Site Visit Certificate as per format given in Appendix 6	
8	Certificate of Registration, Incorporation, along with Memorandum and Articles of association of Bidding entity, its Associate (if applicable).	
9	Letter of Association from the Associate (if applicable)	
10	Consortium Agreement with responsibility matrix	
11	Licensor/Licensee Agreement	
11	All documentary proof for the above mentioned Annexes as mentioned in the RFP	

12	Signed copy of Integrity Pact as per Appendix 7	
13	Undertaking as per Appendix 14	
14	Signed copy of RFP and draft Agreement including all addendum, corrigendum and clarification	
15	Techno-commercial Bid with all supporting documents as mentioned in the RFP	
16	Unpriced Price Bid (as per format in Appendix 9) along with unpriced BOQ as defined in Clause 3.4.4	
17	Any other document/ data/ details to be submitted as mentioned in the RFP	
Price Bid		
1	Price Bid as per format in Appendix 9 along with priced BOQ as defined in Clause 3.4.4	

Appendix 11 – PROJECT DETAILS

INTRODUCTION

IREL intends to set up a De-sliming System on EPC basis, the details of which are mentioned below:

Project Location

The proposed plant will be located at IREL (India) Limited, Manavalakurichi, Kalkulam taluk, Kanyakumari District, Tamil Nadu.

Plant Site Conditions

Location	Manavalakurichi, Kalkulam Taluk, Kanyakumari District, TN Coordinates: 8.15076°N 77.29902°E Altitude : + 1 m above Mean Seal Level Terrain : Plain, seashore
Climatic Conditions	1. Max. temperature : 36 C 2. Max. Of mean daily temperature : 31 C 3. Min. Of mean daily temperature : 25 C 4. Relative humidity (Max.) : 80% (May – June) 5. Relative humidity (Min.) : 85% (Nov. – Dec.)
Wind speed	The general direction of the wind is from East in winter and from West in summer. 10 to 17 km /h during (Dec – Jan) 16 to 26 km/h (May - Jun)
Annual Mean rainfall	About 1400 mm (maximum during June to October)
Susceptibility to Earthquake	Falling under zone – III as defined in IS:1983 However, an increased horizontal seismic coefficient corresponding to Zone –IV shall be used for project execution purposes.
Railways	The main broad gauge line of Southern railways connecting Kanyakumari and Kashmir passes at a distance of 9 km from the eastern boundary of the plant site. The major railway station is Nagercoil at a distance of about 18km.

Sea ports	Tuticorin is the major port with suitable road and rail connections of 160 km distance. Nearest Sea port is Colachel at a distance of 7 km by road.
Airport	The nearest airport is at Thiruvananthapuram at a distance of 65 kms by road.
Road ways	All weather road from plant site to NH-47 connecting Kanyakumari and Salem. One road is the link road of 13 km distance between NH 47 and plant site passes through Thuckalay

POWER & WATER

IREL will arrange for Power from TNEB as may require for the Project. IREL will make for arrangement of water supply for the project.

MANPOWER

Bidder will deploy its manpower up to commissioning

Appendix 12 – TERMS OF REFERENCES

[enclosed separately with the RFP]

Appendix 13 – DRAFT OF AGREEMENT

Draft Agreement for installation of De-sliming system at HUS, IREL-MK, Tamil Nadu on EPC Basis

[enclosed separately with the RFP]

Appendix 14 – FORMAT FOR UNDERTAKING BY THE BIDDER

Undertaking by the Bidder

Date:

To,

M/s. IREL (India) Limited.,
1207, V.S. Marg, Prabhadevi,
Mumbai 400 028

I / We am / are a Vendor /
Customer of IREL (India) Limited (now onwards to be referred as Company).

I / We agree and undertake:

Not to provide any gift and / or inducement to any employee of the Company in connection with securing / being granted favour (s) in my / our dealings with the Corporate office of the company and / or its any field units namely, OSCOM, Chavara, MK, RED & IRERC.

To immediately report any gift and / or inducement sought by any employee of the Company granting favour(s) to me / us in my / our dealings with the Company and / or its field units.

Signature.....

Name.....

Title.....

Name of the Company and Address (with Seal).....

Appendix – 12 – Terms of Reference

PART-I

1 Introduction

- 1.1 IREL intends to install a de-sliming system for removal of slime from the feed material prior to mineral processing at Heavies Upgradation Section (HUS) and the removed slime is to be disposed off in cake form and the filtered water to be reused for HUS process (the "Project").
 - 1.1.1 The ToR is developed based on the study report submitted by CSIR-NML, Chennai under IREL-TDC scheme. The flow sheet for slime removal includes Screen, Hydro cyclones, Attrition scrubber and slime handling system consisting Thickener clarifier and filter press unit. Bidders can modify and add value to the above flow sheet after carrying test work and validation by an agency of global repute.
- 1.2 As part of this endeavor, IREL has decided to undertake installation of the Project on EPC (Engineering Procurement Construction) basis. Now, IREL intends to appoint an "Agency" through this bid process for setting up of the Project on EPC basis.
- 1.3 The role of EPC contractor will include all the following activities, but will not be limited to:
 - 1.3.1 Engineering, procurement, construction, installation, erection, testing and commissioning of the project based on the flow sheet developed by IREL,
 - 1.3.2 Formulation of equipment SoPs (Standard Operating Procedures) and adherence to safety norms
 - 1.3.3 Commissioning of the equipment and ensure commercial operation of the Plant within relevant environmental norms
- 1.4 The intent of this Terms of Reference (ToR) is to furnish the required details for enabling the Bidder to submit their best offer within stipulated time frame as per Scope of Work as described in this Clause 2 of Part I, to achieve the design & technological parameters and achieving Guarantee as per this ToR for "De-sliming System at HUS"
- 1.5 The feed material to HUS shall contain 10-15% Heavy Mineral and 15-20% slime content. Throughput of the feed to HUS shall range from 180-220 tph. The quantity of HUS outputs, i.e HM concentrate and slime cake shall vary depending on the content in Teri sand.
- 1.6 The available process water at HUS is 4000m³/day, drawn from Valliyar River.
- 1.7 The bidder shall consider the process water availability at HUS during the stages of Design and Engineering.
- 1.8 As a part of this project, following activities are proposed to be carried out:
 - 1.8.1 Installation of a system for trash removal from feed to HUS, slime removal from feed to the output stage, de-watering & de-sliming in tailing stream and facility for enhanced process water if required.
 - 1.8.2 Installation of a system for slime disposal in cake form and water recovery system consisting of Thickener and filter press unit.

2 Scope of Work

2.1 General

2.1.1 The scope of work shall broadly cover detailed engineering, procurement, , fabrication, manufacture, inspection, transportation, insurance, storage, handling, dismantling & removal of debris, construction, installation, erection, testing, commissioning, stabilization and demonstration of guarantee parameters of the proposed system, equipment and associated facilities as covered in the following clauses, for the various jobs related to technological/ mechanical, civil, structural, electrical and instrumentation works to be executed.

2.2 Battery Limits

The Battery Limits for the proposed circuits/ plants are given as following:

Particular	Start	End
Screen for removal of Trash(As per enclosed boundary line mentioned in tentative drawing in Annexure-1)	Discharge of belt conveyor BC12 Electrical: Power supply starts from MCC 2H at HUS	Undersize fraction output into the existing RCC constant pulp density tank (CPD) and Oversize fraction in to the rejects collection pit. Electrical: Upto testing and commissioning of all drives
Slime removal system for feed to HUS, consisting of hydrocyclones(As per enclosed boundary line mentioned in tentative drawing in Annexure-1)	From undersize fraction of the Screen Electrical: Power supply starts from new MCC5H at HUS	Ends with underflow fraction of stage-III hydrocyclones discharging to rougher Spiral distributors and overflow of hydrocyclones stages to thickener feed well Electrical: Up to testing and commissioning of all drives
Slime removal system for HUS output, using attrition scrubber(As per enclosed boundary line mentioned on tentative drawing in Annexure-1)	From HUS output i.e. from P12A pump discharge Electrical: Power supply starts from new MCC5H at HUS	Ends with outlet from attrition scrubber discharging to existing hydrosizer feed well. Electrical: Up to testing and commissioning of all drives
De-watering, de-sliming in tailing stream(As per enclosed boundary line mentioned in tentative drawing in Annexure-1)	From HUS tailing i.e. tailing line from P23 & P23A pump discharge	Ends with outlet from hydrocyclones, underflow at tailing yard and overflow to thickener

Pumping Station for process water from settling pond	From suction point of Water pumps Electrical: Power supply starts from new MCC7H at HUS	Ends with process water pipeline terminating at CPD tanks and spiral distributor Electrical: Up to testing and commissioning of all drives
Thickener & Filter Press system	From collection of process overflow Electrical: Power Supply from new MCC7H at HUS	Ends with thickener overflow clean water to pond for reuse, filter press output slime in cake form to designated area through belt conveyor and clean filtrate water to pond for reuse Electrical: Up to testing and commissioning of all drives

A diagram showing Battery Limits for proposed circuit/ plant is given in Annexure-1.

2.3 The Selected Bidder Scope of Work shall include but not limited to

- 2.3.1 Study of Scope of Work and flow sheets and site visit to understand the site condition, assessment of the quality, quantity as well as criticality of the work to be executed
- 2.3.2 Detailed engineering for the implementation of the scope of work
- 2.3.3 Preparation of equipment list /items list and specification for procurement of items in line with IREL's requirement and conditions
- 2.3.4 Preparation of general lay out drawings
- 2.3.5 Preparation of equipment lay out study as per equipment specification, space required for installation, clearances required, foundation details and procedure of installation.

Preparation of civil and structural drawings i.e. drawings of all structure and works for fabrication and installation with details of foundation while taking care that all civil works to be carried out in compliance with all the applicable country / state codal provisions including statutory requirement, seismic zone, wind speed, etc. All the proposed new civil foundation and buildings including MCC rooms shall comply with the applicable building design Indian standard for stability taking into consideration of the cyclonic wind speed condition prevailing in the area and seismic effect, Stability analysis report to be submitted from a competent chartered civil engineer.

Scope of work for all civil Engineering works:

Furnish basic engineering, design basis and design features of civil structures newly to be constructed. Basic engineering design shall also take into account of various statutory requirement/standards as applicable in the country/state. The agency shall also provide the design formulae and computation details to IREL as part of the design basis document as required by EIC time to time.

Detailed Engineering for civil construction:-

All the detail engineering required for the civil construction jobs for the process packages, additional facilities required in the existing plants and other infrastructure necessities shall be scope of the contract, which shall include but not necessarily limited to the following.

- i. Fixation of levels with respect to the existing plant buildings.
- ii. Preparation of final grading plan to establish elevations of all structures, buildings, paved areas, integrated services and approach roads etc. based on basic information supplied by IREL.
- iii. Design criteria for all civil structures including building, foundation, hard strata and roads.
- iv. Preparation of complete designs, drawings, specification for all - RCC buildings, foundations, tanks, equipment structure, hard strata etc. – based on foundation soil characteristics and basic loading indicated in engineering data and loading details supplied by machinery suppliers and also in accordance with the relevant Indian standards. The agency may take the help of the soil investigation report available with IREL. If the agency feels to carry out its own soil investigation then the same can be carried out at his cost.
- v. Preparation of complete detailed design (structural and architectural) and preparation of construction drawings of concrete buildings including super structures, walls, walkways, floors, roof, equipment foundation, anchor bolt setting, floor openings, drains, etc. including bar bending schedule in conformity with relevant Indian standards. The engineering design basis, NDT test, suggested retrofitting work and structural design of all civil structures under this project as per instruction of EIC shall be vetted by competent chartered civil engineer.
- vi. Preparation of schedule of items for civil and finishing works showing the quantities for each item of work in each process package.
- vii. EPC contractor shall establish the technical requirements/ standards schedule for all types of civil engineering raw materials/ inputs like aggregate, cement, steel and other materials. The sampling/ testing procedure shall also be established. While formulating of standards, suitability of local materials available in the region should be considered along with the technical specification and make specified in this document.

Miscellaneous Civil works:

- i. The EPC contractor shall identify the requirement, if necessary and provide detailed engineering services for the relocation/ demolition of existing building / facilities etc. which are necessary to facilitate the implementation of the expansion schemes and ensure smooth / streamlined operation of the combined facility (existing & proposed ones). The suggestions / consideration of IREL shall be taken into account in this regard.
- ii. Formulation Quality Assurance Procedure (here by mentioned as 'QAP') for all civil works as mentioned in the scope.
- iii. The foundation has to be designed and made in such a way that it should not harm the existing foundations nearby. Adequate gap as per the design has to be

maintained between the existing / new foundations. Safe clearance from existing foundation has to be maintained, as per instruction of EIC.

- 2.3.6 The equipment indicated in this section is only indicative. The Bidder shall work out the actual list of equipment with quantities as per the offered design and bring out in the offer
 - 2.3.7 Preparation of schedule of civil works to be executed with details of measurement drawings of building and design details
 - 2.3.8 Preparation of electrical load list and distribution of feeders to different panels
 - 2.3.9 Design of the electrical layout, electrical system based on the requirement of the plant including Preparation of cable schedule and laying diagram, earthing schedule and laying of flat details, lighting schedule, all the electrical equipment and accessories schedules, motors and drives with details.
 - 2.3.10 Preparation of piping lay out, schedule of pipelines, pumps, motors and drives taking into consideration that all pumps shall be of specified make and all accessories of pipeline installation and connection facility to pumps.
 - 2.3.11 Preparation of schedule of execution of the various activities.
 - 2.3.12 Preparation of safety plan, safe operating procedure during execution of project and plant operation.
 - 2.3.13 Execution of supply, installation and commissioning activities for civil, mechanical, process, electrical, instrument works so as to provide satisfactory operation and performance of the expanded plant.
 - 2.3.14 Preparation of testing and commissioning schedules and procedures.
 - 2.3.15 Any project monitoring activity/ other activities incidental and ancillary to the satisfactory performance of the project.
 - 2.3.16 The scope of work mentioned in this chapter is a broad one but details mentioned elsewhere in this document shall also form a part of total scope of work
- 2.4 Drawings and Documents
- 2.4.1 Engineering
 - i. The Bidder is required to develop suitable layouts for the circuit within the available space. The bidder shall also develop their layout in such a way that the incoming, outgoing and in-plant slurry and water pipe lines length are minimized. Layout shall be compact and optimized so that length of electric cables, pipe work, drainage system etc are kept at the minimum without sacrificing the comfort of operational and maintenance requirement.
 - ii. The Selected Bidder shall submit 6(six) sets of drawings and documents for approval of IRE as follows but not limited to:
 - a) GA and sectional drawings for equipment and systems with overall and relevant dimensions and complete bill of materials

- b) Quality assurance plan (QAP) for all equipment
- c) Submission of all load data of the equipment
- d) General arrangement of Motors, control panels, motor control centers, central control desks, etc.
- e) Design calculations for selection and sizing of all equipment
- iii. Following shall be submitted in one set of Pen drive, one set of reproducible and six (6) sets of prints along with supply of equipment:
 - a) All drawings approved/ accepted for reference by IREL
 - b) List of mandatory spare/ fast-wearing parts with detailed drawings, specifications, bill of material, material composition, unit-weight and manufacturer's catalogue
 - c) Name of manufacturers and part number for all electrical, electronic, instrumentation, automation, mechanical and structural components with technical catalogue
 - d) Operation and maintenance manuals
 - e) Performance test certificates
 - f) Instruction for assembly, erection, testing and commissioning of equipment in English language.
 - g) Un-priced purchase orders for bought-out items
- iv. Complete set of "As-built" drawings (on CAD software) incorporating all changes that might have taken place during execution in two sets of pen drives, one set of reproducible and six(6) sets of prints shall be submitted before issue of Final Acceptance Certificate by IREL.

2.4.2 Structural

- i. The Selected Bidder shall prepare all GA/ Structural design drawings and shall obtain IREL's approval on them (after incorporating IREL's comments/ observations, if any). Design drawings shall be submitted for approval while design calculation shall be under reference category only. Quantity of structural work involved shall be indicated in design drawings.
- ii. Approval of the design drawings means that they are checked for the general conformity with the engineering requirement and applicable specifications covered in ToR. Selected Bidder shall, however, remain fully responsible for the completeness of job, correctness of his design, adequacy of structural sections used and successful implementation and satisfactory running of the plant and structures under his scope of work.
- iii. Before starting the work Selected Bidder shall prepare structural design criteria and get it approved through an Authorized Structural Expert before submitting to IREL. The design work for structures shall be guided by the approved design criteria.

- iv. Soft copies of “as-built” drawings shall be submitted to IREL after the completion of erection for future reference

2.4.3 Electrical

- i. Basic and detailed engineering drawings & documents for approval/ reference of IREL. The Selected Bidder shall submit the drawings/ documents for approval/ reference of IREL before commencing manufacturing/ procurement of equipment:
 - a) General Arrangement drawings of all equipment showing all dimensions, plan, side view and front & back view with doors closed and opened.
 - b) Single Line Diagrams of LT distribution.
 - c) Power & Control Schematic Diagrams with control write-up.
 - d) Drawings of AC drive system, MCC, UPS, and other equipment as per scope.
 - e) List of I/Os
 - f) Logic diagram and software for PLC block diagram.
 - g) Equipment layout drawings in all electrical rooms.
 - h) Internal wiring diagrams showing complete details of internal wiring of all component items.
 - i) Terminal board connection diagrams.
 - j) Cable layout & cable route layout drawings. Cable schedule & termination drawing
 - k) Power and electronic earthing scheme
 - l) Drawing for lightning protection
 - m) Bill of Materials with ratings, type, make and quantity.
 - n) Relay setting calculation and Relay co-ordination chart
 - o) Speed-torque characteristic of all motors and respective driven equipment.
 - p) Bill of material of all electrical equipment
 - q) Quality Assurance Plan of various manufacturers of electrical equipment.
 - r) Technical specification/ data sheet of all equipment
 - s) Test certificates
 - t) Suppliers'/ vendors' catalogue/ technical literature
 - u) As built drawings in softcopies and hard copies

2.4.4 Civil works

- i. The Selected Bidder shall prepare all GA/layout/construction/ design drawings and shall obtain IREL's approval on them (after incorporating IREL's comments / observations if any). Design drawings shall be submitted for approval while design calculation shall be under reference category. Quantity of structural work involved shall be indicated in design drawings.
- ii. Approval of the design drawings means that they are checked for the general conformity with the engineering requirement and applicable specifications covered in ToR. Selected Bidder shall, however, remain fully responsible for the completeness of job, correctness of his design, adequacy of structural sections used and successful implementation and satisfactory running of the plant and structures under his scope of work.
- iii. Before starting the work, selected Bidder shall prepare structural design criteria and get it approved through an Authorized Structural/civil engineering expert before submitting to IREL. The design work for structures shall be guided by the approved design criteria.
- iv. The following are to be approved before start of work: Structures of screen, hydrocyclone cluster, attrition scrubber, overhead pipe conduit, sump/pit for water pumps, electrical MCC rooms, standalone structures, thickener & filter press foundation & structure.
- v. Soft copies of "as-built" drawings shall be submitted to IREL after the completion of erection for future reference.

2.4.5 Approval of drawings

The drawings are to be approved by the Engineering in charge of the contract or any person authorized by the Project In charge of IREL, from time to time or specific to any of the requirements.

3 Engineering

3.1 Activities prior to engineering

3.1.1 Within 30 (thirty) days of acceptance of order, the Agency shall:

- i. Appoint a SPOC (Specific Point of Contact) who will represent the Agency and shall be responsible for all activities under the Scope of Work
- ii. The successful bidder shall prepare both basic and detailed engineering work, followed by the execution of erection of the necessary infrastructure and equipment to augment the existing HUS plant with the new slime removal and disposal facility
- iii. A typical approach to this project will involve the sequential completion of the following tasks to ensure the proper implementation and integration of the slime removal system,
 - a. Finalisation of layout as per the IREL flowsheet/as per the validated Flowsheet by the successful bidder who opted for their own flowsheet
 - b. List of proposed equipment with broad specifications.
 - c. Mass and Water Balance
 - d. PFD and P&ID Development
 - e. Plant Layout for Brownfield Project
 - f. Water Recovery System design with disposal of slime cake in an environmentally sustainable manner
 - g. Basic & Detailed Engineering for the scheme
 - h. Plant Layout of Water Recovery System
 - i. Erection & Commissioning
 - j. PG Test
- iv. Undertake and perform all such acts, deeds and things as may be necessary or required before commencement of Works under and in accordance with the Agreement; and
- v. Submit to IREL an **L-3 level** Implementation Plan for execution of all the activities under scope of work, and giving the following details:
 - a) **Part I** Agency's organisation for the Project, the general methods and arrangements for Engineering, Quality Assurance Plan including engineering quality plan and key personnel of the Agency.
 - b) **Part II** Programme for completion of scope of work covering all major Project Milestones within the time period of 15 months specified for the complete project.
- vi. During the progress of the project, Agency has to review the progress of the project fortnightly and submit the latest revised programme, whenever the previous programme is inconsistent with the actual progress or with the Agency's obligations, without effecting the final schedule and keeping the baseline unchanged, by adopting suitable steps to compensate the delay.

- vii. For the avoidance of doubt, the Agency acknowledges and agrees that IREL/ IREL's PMU unit may, within a period of 15 (fifteen) days of receipt of the Implementation Plan, convey its comments to the Agency stating the modifications, if any, required for compliance with the provisions of the Agreement
- viii. Upon obtaining the comments, the Agency shall carry out such modifications, to the extent required for conforming to the provisions of the Agreement without additional cost.

3.2 Engineering

- 3.2.1 The Agency shall develop /undertake system design, detailed engineering, preparation and finalization of technical specifications, bills of quantities (BOQ), functional guarantees, requirement of spares, erection, commissioning and quality requirement, etc., for Project and systems including all process, mechanical, electrical, instrumentation and control system, civil works etc. as required to execute the Project
- 3.2.2 The Agency shall, during the stage of design & detailed engineering, ensure energy and resource conservation through optimization of parameters like specific consumption of power, water and consumable such as flocculant etc.

4 Process/Mechanical/ Technological equipment/ items

4.1 General

4.1.1 The scope of work shall cover engineering, fabrication, , procurement, assembly, inspection & testing at manufacturer's works, painting, packing, transportation, supply, unloading, storage & unpacking at site, erection, testing, trial run, commissioning and demonstration of performance guarantee parameters of technological/ mechanical/process equipment facilities and equipment as envisaged for installation of screen for trash removal, slime removal system for feed to HUS, slime removal system for HUS output, de-watering, de-sliming of tailing stream, pumping station for process water, thickener & filter press system as shown in Annexure-4 and Annexure-5, and as per the process description elaborated in Clause-13 of Part I of this document. The performance parameters as per Clause-9 shall be verified by IREL lab.

4.1.2 All work envisaged in this clause shall be carried out by Selected Bidder based on the details furnished in this ToR. The Selected Bidder shall prepare all necessary general arrangement drawing including fabrication /erection drawing of above proposed plants & facilities.

4.1.3 The Selected Bidder shall submit the drawing /document for approval and reference of IREL based on the list to be discussed and mutually agreed upon.

4.1.4 The **Broad scope of work** is as mentioned below:

- i. **Design, Engineering and installation (as described in details scope below)** of equipment for de-sliming system viz. vibrating screen system, hydrocyclone cluster system, attrition scrubber, process water pumps, slurry pumps, motors, control panels, thickener, filter press, etc.
- ii. Engineering, Supply, installation and commissioning of pipelines i.e. HDPE and MS/ G.I., Wire inserted rubber hoses, bends, short pieces, PU lined short pieces, nuts and bolts etc.
- iii. Fabrication of tanks with flanges, outlets & inlets, etc and erection of structure & foundation for equipment.
- iv. Erection of equipment, pipelines, tanks, connection of pipe lines, motors, pumps to the system, connection of water lines etc.
- v. Supply of all gauges, tools & tackles, measuring instruments required for smooth operation and maintenance of the complete units.
- vi. Demonstration and establishment of guarantee parameters for the offered equipment as elaborated in Clause 9 of Part I of this document.
- vii. Obtaining statutory clearances from Government bodies wherever necessary.
- viii. For purpose of inventory control, mechanical/ electrical items and components of all equipment shall be designed so as to ensure inter-changeability, to the extent possible.

- ix. Any other item necessary for successful commissioning and achieving guarantee parameters will also be under the scope of work of the Selected Bidder and shall be provided by the Bidder without any extra cost and within the time Schedule.

4.1.5 It is for information and necessary action that:

- i. In case Bidder proposes any modification in the attached Process Flow sheets in Annexure-4 and Annexure-5, they may do so with prior approval of IREL keeping all related process & transfer pumps shall be covered in the scope of the Bidder.
- ii. The designed capacity of all the equipment and associated facilities should be 20% higher than the rated capacity, wherever mentioned. The designed capacity of technological units will be as per manufacturer standards on rated capacity
- iii. Supply of suitable holding capacity MS (Mild Steel) collection tanks for handling of slurry, lined with abrasion resistant materials/ rubber lined /PU lined/connector (as applicable), as per process requirement. The tanks shall be provided with external and internal ladders to facilitate upkeep of the tank. The tanks shall also be provided with suitable drain valve.
- iv. The water system shall be designed to minimize the make-up water requirements. All the pumps shall be provided with intake water tanks (pump boxes) of at least 3 minute holding capacity.
- v. All related piping & fitting required for the proposed plants. Isolation valves shall be considered at the tapping point and in each subsequent branching
- vi. All provisions required for collection of samples for process monitoring to assess the performance.
- vii. Rubber lining of minimum 6 mm thickness has been considered for all boil box of slurry handling tanks
- viii. The make-up water for the process water shall be provided from existing settling pond.
- ix. All related pipe works for slurry and water distribution as per system requirement.

4.1.6 Construction Methodology and Sequence of Erection

- i. The Bidder shall submit the construction methodology to be adopted by the bidder with respect to space management, erection sequence, testing and commissioning within 15 days of signing of the Agreement.

4.2 Screen for trash removal

- 4.2.1 The proposed screen for trash removal system shall consist of wet vibrating screen of 250 tph capacity, as per technical specification, suiting to the existing concrete slurry tank for screen underflow collection. The feed material to the trash removal screen is Beach sand mineral's ore, having particle size distribution as below

Size(in microns)	Wt% Retained	Cumulative %
1680	0.37	0.37
850	0.92	1.29
600	3.90	5.19
425	7.66	12.85
300	20.89	33.74
212	25.11	58.85
150	11.13	69.98
106	5.75	75.71
75	1.84	77.55
45	2.41	79.97
-45	20.03	100.00

4.2.2 The scope of supply will include but not limited to the following along with any other material/work required for the satisfactory implementation of the flow sheet attached:

- i. Design and supply of wet vibrating screen of 250 tph for trash removal, along with accessories such as collection chutes, spray water pipes, drive motor, bends, nut& bolt etc., as per requirement of site.
- ii. Dismantling of the existing trommel screen and chutes, structures etc associated with trommel.
- iii. Dismantling of existing Mixing Chamber. Supply, installation and commissioning of rubber lined Mixing Chamber along with chutes, structures etc. is in the scope of the agency and agency shall refer to the existing belt conveyor for execution of the same.
- iv. Installation and commissioning of the vibrating screen, connecting the inlet and outlet chutes, platforms for access including modifications to existing platform.
- v. Supply of all required material including steel, towards installation and commissioning of the screen as per technical specification, with all accessories for satisfactory performance. Design of screen is in the scope of Agency and Agency shall consider mixing chamber outlet chute, dimension of RCC tank (Tank 1) in operation for collection of screen undersize fraction and oversize collection pit.
- vi. Design and supply of Electrical motor(s) with minimum 20% design margin over rated capacity as per technical specification and make specified for the above drives make: Siemens, ABB, CG, Kirloskar
- vii. The Bidder shall asses the requirement of dismantling/ modification/ installation during site visit
- viii. Supply and installation of all spray water pipe lines along with valves

4.2.3 Shutdown of HUS operation required for erection of Screen and Mixing chamber shall be notified by the bidder to IREL, accordingly a total of 5 days shutdown shall be provided for erection and commissioning of Screen and Mixing chamber, subsequent to which the Screen shall be integrated with HUS operation.

4.2.4 Technical specifications of all supply items detailed in Clause 4.2.2 are given in Annexure-2.

4.3 Slime removal system for feed to HUS

4.3.1 The scope of Supply and installation and commissioning will include but not limited to the following along with any other materials required for the satisfactory implementation of the flow sheet attached:

Stage-I:

- i. De-sliming Hydrocyclone cluster-I of 220tph rated input capacity suitable for the beach sand minerals classification matching to mineral size analysis and specific gravity of materials in the range of 2.65 – 5, complete with all accessories.
- ii. Installation and commissioning of hydrocyclone cluster system complete in all respects. Design of hydrocyclone cluster is in the scope of the Agency and Agency shall refer to the existing MS CPD tank (Tank 2) at site for cluster underflow collection.
- iii. Supply of 1 no. of slurry pump of approximately 20% higher than the required capacity for handling sand slurry at minimum of 25% pulp density(PD) and a static head of 10m.
- iv. Supply of Electrical motor of rating at least 20% higher than the required size as per technical specification mentioned and make specified
- v. Design and selection of slurry pump and pipelines is in the scope of the Agency and Agency shall refer to the existing RCC tank (Tank 1) at site for installation of the pump.
- vi. Installation and commissioning of pump and motor system in existing RCC tank (Tank 1) for feeding to De-sliming hydrocyclone cluster-I, complete in all respects including short pieces, bend socks etc. Any other materials required for the successful installation and commissioning of the pump is also part of the scope.
- vii. Supply installation and commissioning of HDPE pipes and MS wire inserted flexible hoses of suitable size as per design along with all accessories like bends, tees, valves, nut and bolts for different interconnection - Minimum 30meters. The scope includes supply of all accessories suitable to the site including and not limited to bends, pipe with flange, short pieces, nut and bolts, etc.

- viii. Design of overhead pipe line(GI pipes) of suitable size for hydrocyclone cluster over flow water collection with a slope of 1:100 to handle approximately 1500m³ of process water with 3% solids, Supply and installation and commissioning of GI pipes along with all accessories like bends, tees, nuts and bolts for different interconnection and to collect the overflow water, direct it to thickener dosing system/feed well and a tee branch to settling pond channel with valves as per instruction of EIC - Minimum 125meters for making overhead pipeline.
- ix. Supply, installation and commissioning of HDPE pipes and MS wire inserted flexible hoses of suitable size as per design along with all accessories like bends, tees, valves, nut and bolts for bypass arrangement to pump slurry from tank-1 to spiral distributors through a distribution manifold.
- x. The Bidder shall assess the requirement of dismantling/ modification/ installation during site visit

Stage-II

- xi. De-sliming Hydrocyclone cluster-II of suitable input capacity for handling the underflow fraction of Stage-I cluster, complete with all accessories. Hydrocyclone cluster-II shall have a suitable capacity slurry holding constant pulp density (CPD) tank (Tank 3) having two separate pump connections (as per technical spec.) which constitute the feeding system for Stage-III.
- xii. Installation and commissioning of hydrocyclone cluster system complete in all respects. Design of hydrocyclone cluster and CPD tank (Tank 3) for hydrocyclone cluster-II underflow collection are in the scope of the Agency.
- xiii. Supply of 1 nos. of slurry pump of approximately 20% higher than the required capacity for handling sand slurry at minimum of 25% pulp density (PD) and a static head of 10m.
- xiv. Supply of Electrical motor of rating at least 20% higher than the required capacity as per technical specification mentioned and make specified
- xv. Design and selection of slurry pump and pipelines are in the scope of the Agency and Agency shall refer to the existing MS CPD tank (Tank 2) for installation of the pump.
- xvi. Installation and commissioning of pump and motor system at existing MS CPD tank (Tank 2) for feeding to De-sliming hydrocyclone cluster-II, complete in all respects including short pieces, pulleys, belts, bends etc. Any other materials required for the successful installation and commissioning of the pump is also part of the scope.
- xvii. Supply installation and commissioning of HDPE pipes and wire inserted flexible hoses of suitable size as per design along with all accessories like bends, tees, valves, nut and bolts for different interconnection - Minimum 20meters. The scope includes supply of all accessories suitable to the site including and not limited to bends, pipe with flange short pieces, nut and bolts, etc

- xviii. Design of hydrocyclone cluster over flow water collection piping to connect with common overhead header line (refer S.No viii), Supply, installation and commissioning of pipes along with all accessories like bends, tees, nut and bolts for different interconnection and to collect the overflow water.
- xix. Supply and installation of all makeup water pipe lines for Tank 3 along with valves.
- xx. The Bidder shall assess the requirement of dismantling/ modification/ installation during site visit.

Stage-III

- xxi. De-sliming Hydro cyclones (4 nos) of suitable input capacity for handling the underflow fraction of Stage-II cluster, complete with all accessories
- xxii. Design, Installation and commissioning of hydrocyclone system complete in all respects including repulping arrangement in the spiral distributors.
- xxiii. Design, supply and installation of manifold pipe for slurry distribution to 4 nos de-sliming hydro cyclone to ensure uniform feed to 4 nos of spiral banks (2 each of 36 starts and 24 starts) respectively.
- xxiv. Supply of 2 nos. of slurry pumps of approximately 20% higher than the required capacity for handling sand slurry at minimum of 25% pulp density (PD) and a static head of 10m.
- xxv. Supply of Electrical motors of rating at least 20% higher than the required capacity as per technical specification mentioned and make specified
- xxvi. Design and selection of slurry pump and pipelines is in the scope of the Agency and Agency shall consider the proposed CPD tank (Tank 3) for installation of the pump.
- xxvii. Installation and commissioning of pumps and motors system in the proposed CPD tank (tank 3) for feeding to Stage-III hydrocyclones, complete in all respects including short pieces, pulleys, belts, bends etc. Any other materials required for the successful installation and commissioning of the pump is also part of the scope.
- xxviii. Supply installation and commissioning of HDPE pipes and wire inserted flexible hoses of suitable size along with all accessories like bends, tees, valves, nut and bolts for different interconnection - Minimum 60meters. The scope includes supply of all accessories suitable to the site including and not limited to bends, pipe with flange short pieces, nut and bolts, etc
- xxix. Design of hydrocyclones' over flow water collection piping to connect with common overhead header line (refer S.no viii), Supply and installation and commissioning of pipes along with all accessories like bends, tees, nut and bolts for different interconnection and to collect the overflow water.

4.3.2 Technical specifications of all supply items detailed in Clause 4.3.1 are given in Annexure-2.

4.4 Slime removal system for HUS output

4.4.1 The scope of Supply and installation and commissioning will include but not limited to the following along with any other materials required for the satisfactory implementation of the flow sheet attached are also in the scope of Agency:

4.4.2 The scope of supply will include:

- i. Attrition scrubber of 35tph rated input capacity suitable for removal of coated slime on the surface of beach sand minerals complete with all accessories
- ii. Installation and commissioning of attrition scrubber system complete in all respects
- iii. Design, Supply and Installation of slurry holding CPD tank of suitable size with makeup water pipe lines for attrition scrubber output complete in all respects.
- iv. Supply of 1 no. of slurry pump of approximately 20% higher than the required capacity for handling sand slurry of attrition scrubber output.
- v. Supply of Electrical motor of ratings at least 20% higher than the required capacity as per technical specification mentioned and make specified.
- vi. Installation and commissioning of pump and motor system complete in all respects including short pieces, bends socks etc. Any other materials required for the successful installation and commissioning of the pump is also part of the scope
- vii. Supply installation and commissioning of HDPE pipes and wire inserted flexible hoses of suitable size along with all accessories like bends, tees, valves, nut and bolts for different inter connection. The scope includes supply of all accessories suitable to the site including and not limited to bends, pipe with flange short pieces, nut and bolts, etc.

4.4.3 Technical specifications of all supply items detailed in Clause 4.4.2 are given in Annexure-2

4.5 Slime removal from HUS tailing

4.5.1 The scope of Supply and installation and commissioning will include but not limited to the following along with any other materials required for the satisfactory implementation of the flow sheet attached are also in the scope of Agency:

4.5.2 The scope of supply will include:

- i. De-watering, de-sliming hydro cyclones (2 nos) of suitable capacity for removal of slime and water complete with all accessories
- ii. Installation and commissioning of hydrocyclones complete in all respects
- iii. Design, fabrication and Installation of support structure for the hydrocyclones (approximately 15m height)

- iv. Supply installation and commissioning of HDPE pipes and wire inserted flexible hoses of suitable size along with all accessories like bends, tees, valves, nut and bolts for different inter connection. The scope includes supply of all accessories suitable to the site including and not limited to bends, pipe with flange short pieces, nut and bolts, etc.
 - v. Suitable tee piece along with butterfly valves arrangement to be provided in every 12m length of HDPE pipes/wire inserted flexible hose.
- 4.5.3 Technical specifications of all supply items detailed in Clause 4.4.2 are given in Annexure-2

4.6 Pumping Station for process water:

- 4.6.1 The scope of Supply and installation and commissioning will include but not limited to the following along with any other materials required for the satisfactory implementation of the flow sheet attached are also in the scope of Agency:
- 4.6.2 The scope of design, engineering, Supply and installation and commissioning will include but not limited to the following:
 - i. Three centrifugal water pumps of suitable capacity each for process water, with all its accessories as per detail specification and specified make enclosed, complete with all accessories like water flow meter, pressure gauge, butterfly/gate valve before suction, etc.
 - ii. Installation of the pumps shall be below the water level with positive suction of at least 2 m
 - iii. Supply of Electrical motors of different ratings at least 20% higher than the required capacity as per technical specification mentioned and make specified
 - iv. Installation and commissioning of pump and motor system with VFD complete in all respects including short pieces, bends etc. Any other materials required for the successful installation and commissioning of the pump is also part of the scope
 - v. Design of 2 nos of water header line of Schedule 40 pipes and suitable size to provide makeup water to all tanks and all branching lines to be made with suitable size GI seamless pipe, Supply and installation and commissioning of all GI pipes along with all accessories like bends, tees, valves, nut and bolts for all tanks as per instruction of EIC- (Minimum 80 meters for each water header and 100 meters for makeup water)
 - vi. The following aspects shall be considered for designing and installation of water headers:
 - two water pumps shall be in operation and one shall be a standby pump.
 - discharge of the water pumps shall be interconnected such that any two of the pumps in operation should supply water to individual header.

- Each header shall be equipped with an electromagnetic flow meter at the vertical position of the pipe along with remote display of flow rate in the control room.
 - all header pipes shall be sand blasted to a finish of SA2 ½ and painted with Epoxy primer followed by two coats of epoxy coal tar black paint.
 - Header line shall be laid underground at road crossing & elevated to the distributor level with proper foundation, support and clampings.
 - Flanged joints shall be as per BS10 table D with rubber gasket.
 - Branch pipes shall be provided to CPD tanks P1, P1B, P2, P10, P22 and rougher spiral distributors
- vii. Supply, installation and commissioning of motorized gate valves at each water pumps immediate discharge and suitable valves & bellows at pumps' suction.
- viii. Supply, installation and commissioning of 2ton EOT/Monorail crane above the water pumps to handle the maintenance of pumps, motors and valves in the pumping station along with load testing by the competent Engineer as per Factories Act 1948
- ix. Supply, installation and commissioning of a sump pump of 35-50 m³/hr capacity for draining the sump.
- x. The Bidder shall assess the requirement of dismantling/ modification/ installation during site visit.

4.6.3 Technical specifications of all supply items detailed in Clause 4.6.2 are given in Annexure-2.

4.7 Thickener & Filter Press System

- 4.7.1 The scope of Supply and installation and commissioning will include but not limited to the following along with any other materials required for the satisfactory implementation of the flow sheet attached are also in the scope of Agency.
- 4.7.2 The scope of design, engineering, Supply and installation and commissioning will include but not limited to the following
- i. Automated PLC based Thickener of suitable size to handle the process water overflow from hydrocyclones and tanks in HUS, complete with all accessories such as platform/bridge, collection launder, flocculation tank, rake & impeller drive etc, as per the site conditions at Pond 3 (thickener diameter must be limited to 30m).
 - ii. Design of thickener feed well shall take into consideration that two fractions of overflow (Stream-1 is the overflow from hydrocyclone, by gravity through overhead pipeline and Stream-2 is the process overflow from CPD tanks, by pumping) are to be accommodated.

- iii. Design, supply, installation and commissioning of suitable slurry pump of and drive rating, with automatic level control and VFD to handle process overflow water from HUS circuit (Stream-2), so as to prevent contamination of process water available in pond.
 - iv. Design, supply, installation and commissioning of feed dosing system for bio-degradable environmental friendly Flocculant addition and sludge pumping system complete with all accessories
 - v. Supply of Bio-degradable, environmental friendly Flocculant for 12-months of thickener operation as per technical specification
 - vi. Filtration system shall be included for processing of filtrate water from filter press, if required, to achieve the performance guarantee parameters.
 - vii. Automated PLC based Filter press system of suitable capacity for handling the sludge output of thickener, complete with all accessories such as transfer pumps, belt conveyors to transfer the cake to designated area, cleaning system etc as per site conditions.
- 4.7.3 Technical specifications of all supply items detailed in Clause 4.6.2 are given in Annexure-2.

5 Civil

5.1 General

- 5.1.1 The scope of work for the Selected Bidder includes design, engineering, supply of labour & materials, transportation, dismantling as per requirement, necessary site preparation, earth work, cofferdam, dewatering, earth filling, construction of Buildings, foundations of equipment, pipe support foundation, frameworks, staircases retaining wall etc wherever required with tools, tackles complete as required for foundation of trash removal screen, slime removal from feed to HUS prior to processing in spiral, an Attrition scrubber for slime removal from output of HUS, de-watering & de-sliming in tailing stream and pumping station with control room for process water at settling pond in HUS, thickener and filter press system as per major scope of works under the clauses below complete.
- 5.1.2 Any dismantling work, if required, will be carried out with due permission from IREL.
- 5.1.3 The major new Construction & Modification (wherever applicable) works will include but not limited to the following:
- i. Site clearance after removing all bushes, shrubs, uprooting stubs, clearing of Slime from pond, pipelines, any other scrap materials like cables, pipes, debris etc; area survey of the proposed area of construction including site survey, area cutting/leveling & area development.
 - ii. Slope stabilization (wherever required) and RCC framed Electrical MCC and control room as per requirement.
 - iii. RCC foundations, including plinth beams for Structural steel building shed for proposed circuit/ plant including RCC floor on boulder soling, floor finishes, cable & pipe trenches, etc will be as per design report to meet the requirement of site.
 - iv. Construction of RCC foundations for the equipment foundations as per the flow sheet/ technological requirements inside the proposed system. Moreover, the foundation/pedestals for the Structural supports/columns for structural platforms and Brick enclosures for store Room etc shall be constructed as per technological requirement.
 - v. Construction of RCC framed foundations/ modification of existing foundation as per process/technological requirement for installation of trash removal from feed to HUS, slime removal from feed to HUS prior to processing in spiral, an Attrition scrubber for slime removal from output of HUS, de-watering & de-sliming in tailing stream and pumping station with control room for process water at settling pond in HUS.
 - vi. Construction of RCC foundations/pedestals for the pipeline/ launder wherever required.
 - vii. RCC work for various equipment foundations & facilities as per technological requirement.

- viii. RCC foundation for structural steel trestles for pipeline supporting structural steel trestles & pipeline saddle.
- ix. The Electrical control Room, MCC room & different enclosures for pumping station with control room for process water at settling pond and control cabin for thickener & filter press in HUS shall be as per technological and process requirements and painting/finishing/ water proofing to be provided by EPC contractor that specifies the best solution prevailing in market. For false flooring, ceiling, door, window & ventilators- innovative solutions shall be offered

5.1.4 The scope of Civil works of Selected Bidder is not limited to the major items of civil works as elaborated above but includes all civil works required, within the battery limits, for the successful completion of the project.

5.1.5 All construction equipment required for execution of the work shall be arranged, procured & hired by Selected Bidder at his own cost along with operations, skilled & semi-skilled personnel. The Selected Bidder shall also furnish a list of construction equipment to be deployed by him.

5.1.6 The Selected Bidder shall furnish requirement of construction water & power based on daily peak requirement, average requirement & lean requirement throughout in course of execution of the project. Construction water & power shall be provided by IREL at a single point each for site works, at the boundary of battery limit. The Selected Bidder shall make his own arrangement to tap and lay necessary piping, cables, wiring etc from the source to the user points.

5.2 Screen for trash removal

5.2.1 All civil works to be done taking into account CPWD latest standards and factoring seismic zone as per specification enclosed.

5.2.2 Scope of Selected Bidder for civil works will include but not limited to the following:

- i. The foundation of the support structure for screen mounting & mixing chamber shall be done on the periphery of the existing RCC circular tank.
- ii. Design of foundations is in the scope of the agency and site conditions are to be taken into considerations during design.
- iii. RCC foundation and support of the vibrating screen to be done without causing any damages in the existing nearby structure. Agency shall carry out detail study and specify the suitable location of foundation and structure to access the scope of the work.
- iv. Design and construction details of drawing to be submitted by the bidder.

5.2.3 Technical specifications of all supply items detailed in Clause 5.2.2 are given in Annexure-2.

5.3 Slime removal system for feed to HUS

5.3.1 The scope of Selected Bidder for civil works will include but not limited to the following:

- i. RCC foundation of slime removal hydrocyclones cluster system and supporting structure for overhead pipe line to be done at HUS.
- ii. Design of foundations and overhead pipe line (for 3-stage hydrocyclone overflow fraction) supporting structure as per requirement of site for the completion of the work and details of the same are to be submitted.
- iii. Agency shall carry out detail study and specify the suitable location of foundation and supporting structure to access the scope of the work.
- iv. Design and construction details of drawing to be submitted by the bidder.

5.3.2 Technical specifications of all supply items detailed in Clause 5.3.1 are given in Annexure-2.

5.4 Slime Removal system for HUS output

5.4.1 The scope of Selected Bidder for civil works will include but not limited to the following:

- i. RCC foundation of attrition scrubber system to be done at HUS.
- ii. Design of foundations of attrition scrubber as per requirement of site for the completion of the work and details of the same are to be submitted.
- iii. Agency shall carry out detail study and specify the suitable location of foundation to access the scope of the work.
- iv. Design and construction details of drawing to be submitted by the bidder.

5.4.2 Technical specifications of all supply items detailed in Clause 5.4.1 are given in Annexure-2.

5.5 Slime Removal system for HUS tailing

5.5.1 The scope of Selected Bidder for civil works will include but not limited to the following:

- i. RCC foundation of hydrocyclones structure to be done at HUS.
- ii. Design of foundations as per requirement of site for the completion of the work and details of the same are to be submitted.
- iii. Agency shall carry out detail study and specify the suitable location of foundation to access the scope of the work.
- iv. Design and construction details of drawing to be submitted by the bidder.

5.5.2 Technical specifications of all supply items detailed in Clause 5.5.1 are given in Annexure-2.

5.6 Pumping station for process water

5.6.1 The scope of Selected Bidder for civil works will include but not limited to the following:

- i. RCC sump for process water pumping station and water header pipeline support to be done as per requirement of site for the completion of the work and design is in the scope of Agency.
- ii. Design & Construction of MCC room for slime removal system and pump station to be done as per requirement of site for the completion of the work
- iii. Modifications in the existing culvert, channel etc, to accommodate the required flow rate and settling pond boundary with necessary supporting structures.
- iv. Agency shall carry out detail study and specify the suitable location of pump station and MCC rooms to access the scope of the work.
- v. Design and construction details of drawing to be submitted by the bidder

5.7 Thickener & Filter Press System

5.7.1 The scope of Selected Bidder for civil works will include but not limited to the following:

- i. Design and construction of RCC tank of thickener as per requirement of site for the completion of the work
- ii. RCC foundation, shed and control cabin for filter press system to be done at HUS.
- iii. Modifications in Pond-1 to ensure process overflow from HUS circuit (Stream-II) shall not contaminate the process water available in settling pond.
- iv. Agency shall carry out detail study and specify the suitable location of foundation to access the scope of the work.
- v. Design and construction details of drawing to be submitted by the bidder.

5.7.2 Technical specifications of all supply items detailed in Clause 5.7.15.4.1 are given in Annexure-2.

5.8 Any other work not specifically mentioned but required for completeness of the job considering Technical / Technological aspects shall be included in the scope of work for the Bidder.

5.9 General

5.9.1 The scope for structural steel work shall include complete design, preparation of drawings, supply of all materials, fabrication, testing, erection, painting, of all steel structures for all installations. This includes:

- 5.9.2 Preparation and supply of design criteria and calculation (including load data, insert details if any, details of base plate, shear key if any, foundation bolts and any information necessary for RCC work), list of drawings, design drawings, fabrication drawings with bill of material for steel structures / sheeting / glazing etc.
- 5.9.3 Supply of all materials, fabrication with own tools and tackles, painting, transportation, delivery and storage at site of all fabricated steel structures, sheeting/glazing, bolts, fixtures, all consumables including handling equipment, labour etc. complete in all respects.
- 5.9.4 Erection of fabricated structures (with own tools, tackles, labour, cranes, handling equipment and any staging or false work required for erection), aligning, fixing, bolting/welding, leveling etc
- 5.9.5 Painting of all structural steel work
- 5.9.6 Inspection, testing and commissioning of all steel structures

6 Electrical

6.1 General

- 6.1.1 The scope of work shall include design, engineering, testing, supply, erection and commissioning of electrical system of proposed screen for trash removal, slime removal system for feed to HUS, slime removal system for HUS output and pumping station for process water.
- 6.1.2 The scope of services of the Bidder includes:
- i. Detail engineering based on basic input given in the TOR.
 - ii. Sizing & selection of equipment/ components
 - iii. Technical services relating to planning, procurement, inspection, expediting, packing, storing
 - iv. Technical construction, project management
- 6.1.3 Assistance in obtaining clearance and approval from DGMS statutory authorities, if required before charging the electrical equipment of the installation shall form an important part of the scope of work under this specification. All necessary modifications to the proposed scope and technical specification shall be with the consent of EIC.

6.2 Screen for Trash removal

- 6.2.1 The Selected Bidder scope shall include but not limited to Supply, installation and commissioning of:
- i. Supply, installation and commissioning of drive motor of suitable rating for the vibrating screen
 - ii. Laying and termination of suitable size (Al or Cu) conductor armoured power cable and Cu conductor armoured control cables as per requirement of the drive from MCC3H. This includes the supply of cables, cable ties, cable identification mark, sockets, glands etc and the fixation of the same as per requirement
 - iii. Push button stations (IP64) as per specification including frame/foundation work, and termination of cable with supply of sockets, glands, etc as required at site. All nut bolt accessories required for the satisfactory performance of the system in included in the scope of Agency
 - iv. Suitable width min FRP cable tray ladder type as per specification at site. This includes the supply of structural steel and fabrication of supports and brackets as per requirement of site for installation of cable trays s per the standard specification enclosed. Minimum length of cable tray is 20m.
 - v. Physical double earthing for the drive motor as per IS 3043 by flexible copper cable with both sides socketed from the nearby flat.
- 6.2.2 Technical specifications of all supply items detailed in Clause 6.2.1 are given in Annexure-2.

6.3 Slime Removal system for feed to HUS

6.3.1 The Selected Bidder scope shall include but not limited to Supply, installation and commissioning of:

Stage-I, II & III

- i. Supply, installation and commissioning of drive motors of suitable rating for the 3-stage de-sliming hydrocyclones' feed pumps.
- ii. Design, Supply, installation and commissioning of MCC6H at desired location with termination of all power and control cables with supply of sockets, glands, termination kit indoor/outdoor etc as required at site. All fasteners, accessories required for the satisfactory performance of the system in included in the scope of Agency.
- iii. Laying and termination of suitable size Aluminium conductor armoured power cable as per requirement, from MCC5H to the MCC6H. This includes the supply of cables, cable ties, cable identification mark, sockets, glands etc and the fixation of the same as per requirement
- iv. Laying and termination of suitable size (Al or Cu) conductor armoured power cable and Cu conductor armoured control cables as per requirement from MCC6H to the drives. This includes the supply of cables, cable ties, cable identification mark, sockets, glands etc and the fixation of the same as per requirement.
- v. Push button stations (IP64) for all drives as per specification including frame/foundation work, and termination of cable with supply of sockets, glands, etc as required at site. All nut bolt accessories required for the satisfactory performance of the system in included in the scope of Agency
- vi. Physical double earthing for drive motor as per IS 3043 by flexible copper cable or bare copper wires with both sides socketed from the nearby flat.
- vii. Suitable width min FRP cable tray ladder type as per specification at site. This includes the supply of structural steel and fabrication of supports and brackets as per requirement of site for installation of cable trays s per the standard specification enclosed. Minimum length of cable tray is 40m.
- viii. Electrical insulating mats-1m x 3m -20nos
- ix. Fire extinguishers for the MCC room as per requirement and design in consultation with our fire department.

6.3.2 Technical specifications of all supply items detailed in Clause 6.3.1 are given in Annexure-2.

6.4 Slime removal system for HUS output

6.4.1 The Selected Bidder scope shall include but not limited to Supply, installation and commissioning of:

- i. Supply, installation and commissioning of drive motors of suitable rating for the attrition scrubber agitator drive and pump (P12B) for handling of attrition scrubber output.
- ii. Laying and termination of suitable size (Al or Cu) conductor armoured power cable and Cu conductor armoured control cables as per requirement, from MCC6H to agitator drives. This includes the supply of cables, cable ties, cable identification mark, sockets, glands etc and the fixation of the same as per requirement
- iii. Laying and termination of suitable size (Al or Cu) conductor armoured power cable and Cu conductor armoured control cables as per requirement, from MCC3H to (P12B) drive. This includes the supply of cables, cable ties, cable identification mark, sockets, glands etc and the fixation of the same as per requirement
- iv. Push button stations (IP64) as per specification including frame/foundation work, and termination of cable with supply of sockets, glands, etc as required at site. All nut bolt accessories required for the satisfactory performance of the system in included in the scope of Agency.
- v. Suitable width min FRP cable tray ladder type as per specification at site . This includes the supply of structural steel and fabrication of supports and brackets as per requirement of site for installation of cable trays s per the standard specification enclosed. Minimum length of cable tray is 30m.
- vi. Physical double earthing for the drive motor as per IS 3043 by flexible copper cable with both sides socketed from the nearby flat.

6.4.2 Technical specifications of all supply items detailed in Clause 6.4.1 are given in Annexure-2.

6.5 Pumping Station for process water

6.5.1 The Selected Bidder scope shall include but not limited to Supply, installation and commissioning of:

- i. Supply, installation and commissioning of drive motors of suitable rating for the water pumps for process water, motorized gate valves, sump pump and EOT/Monorail crane.
- ii. Design, Supply, installation and commissioning of MCC7H at suitable location with termination of all power and control cables with supply of sockets, glands, termination kit indoor/outdoor etc as required at site. All fasteners, accessories required for the satisfactory performance of the system in included in the scope of Agency.
- iii. Laying and termination of suitable size (Al or Cu) conductor armoured power cable and Cu conductor armoured control cables as per requirement from MCC7H to the drives. This includes the supply of cables, cable ties, cable identification mark, sockets, glands etc and the fixation of the same as per requirement.

- iv. Push button stations (IP64) for all drives as per specification including frame/foundation work, and termination of cable with supply of sockets, glands, etc as required at site. All nut bolt accessories required for the satisfactory performance of the system is included in the scope of Agency
- v. Physical double earthing for drive motor as per IS 3043 by flexible copper cable or bare copper wires with both sides socketed from the nearby flat.
- vi. Suitable width min FRP cable tray ladder type as per specification at site . This includes the supply of structural steel and fabrication of supports and brackets as per requirement of site for installation of cable trays as per the standard specification enclosed. Minimum length of cable tray is 30m.
- vii. Electrical insulating mats-1m x 3m -20nos
- viii. Fire extinguishers for the MCC room as per requirement and design in consultation with our fire department

6.6 Thickener & Filter Press System

6.6.1 The Selected Bidder scope shall include but not limited to Supply, installation and commissioning of:

- i. Supply, installation and commissioning of drive motors of suitable rating for the thickener rake, sludge impeller, Flocculant dosing system, Stream-2 slurry pump etc.
- ii. Supply, installation and commissioning of drive motors of suitable rating for the Filter press feeding pump, hydraulic system, belt conveyors etc.
- iii. Laying and termination of suitable size (Al or Cu) conductor armoured power cable and Cu conductor armoured control cables as per requirement, from MCC7H to thickener and filter press system PLC based control panels. This includes the supply of cables, cable ties, cable identification mark, sockets, glands etc and the fixation of the same as per requirement
- iv. Supply, installation and commissioning of PLC based SCADA system for overall control of the thickener and filter press system. The system shall be mainly used for monitoring/controlling the plant operation, sequential operation of motors, safety interlocks, alarm annunciation & data acquisition purpose
- v. Push button stations (IP64) as per specification including frame/foundation work, and termination of cable with supply of sockets, glands, etc as required at site. All nut bolt accessories required for the satisfactory performance of the system is included in the scope of Agency.
- vi. Suitable width min FRP cable tray ladder type as per specification at site. This includes the supply of structural steel and fabrication of supports and brackets as per requirement of site for installation of cable trays as per the standard specification enclosed.

- vii. Physical double earthing for the drive motor as per IS 3043 by flexible copper cable with both sides socketed from the nearby flat.

7 Instrumentation

7.1 General

7.1.1 The proposed slime removal system (consisting of 3-stage hydrocyclones, attrition scrubber and process water pumping station) equipment control panels shall be PLC compatible.

7.1.2 The proposed thickener and filter press system shall be a PLC based SCADA which shall be compactable to the existing one as well as these two can be connected together to provide all the information at the control room. It is proposed to be provided with latest Instrumentation & Control (I&C) system adequate for efficient operation as well as monitoring of the system from a centralized control room. Remote operation, monitoring and intelligent control from central control room has been envisaged.

7.1.3 Major control and measurement parameters considered are as per the following:

The proposed instrument installations cover the following:

- i. PLC based SCADA system is envisaged for overall control of the thickener and filter press system. The system shall be mainly used for monitoring/controlling the plant operation, sequential operation of motors, safety interlocks, alarm annunciation & data acquisition purpose.
- ii. Flow transmitters are to be provided for process water flow measurement.

7.1.4 List of Measurements & Controls

7.1.5 The measurements & controls shall include, but not limited to, the following, in general:

General Measurements:

- i. Measurement of pressure of water at header.
- ii. Measurement & signaling (high & low) of level of water in sumps with interlocking of pump operation.
- iii. Measurement & signaling (high & low) of level of solid ores in the thickeners.
- iv. Measurement & signaling (high & low) of level of water in the thickeners.
- v. Any other measurement as required for simple, better & economic operation of the process.

7.2 Thickener and Filter press

7.2.1 Following are the scope of work activities for the proposed plant:

- i. Design, Supply, installation and commissioning of the
 - PLC based SCADA system as per the specification enclosed
 - UPS system as per the specification enclosed (UPS for instrumentation as well as emergency lighting is covered under the scope)

- Cables and profibus Communication cables and cable tray as per the specification enclosed
 - Air-conditioning system as per the specification enclosed
 - Display screens as per the specification enclosed.
- ii. Supply, installation and commissioning of the complete system approved with required wiring, termination and interlinking to existing PLC system for control of operation and process data monitoring as per the specification enclosed.
- iii. The PLC based SCADA system shall have separate modules/screens for status display of the following:
- Clarifier/Thickener control system
 - Flocculant dosing system
 - Level control of clarifier/thickener
 - Control of Feed pump to filter press
 - Pneumatic control of filter press.
 - Conveying system of Slime cake.
 - Alarm Log
 - Historical data logging

7.2.2 Technical specification of all supply items detailed in Clause 7.2.1 is given in Annexure-2.

8 Spares/ Consumables/ Miscellaneous item

8.1 The essential spares – for 1 Year of Operation & Maintenance.

The bidder shall Supply essential O & M spares required for continuous operation of the equipment for One year. Spares shall be supplied for all items found essential, before commencing the commissioning of the project. Spares for all pumps, impellers, rake, filters, filter media, valves, diaphragm etc. which shall be standardized with existing plant & machinery.

8.2 Consumables, First fill and commissioning chemicals and spares

The bidder shall include in his tender the specifications including equivalent brand names, and quantities and itemized prices for all consumable materials like chemicals, oil, grease required during start-up, commissioning, first fill and consumables required for 1 year. This shall be deemed to be part of the scope.

9 Performance Guarantee

9.1 General

9.1.1 Performance guarantee tests shall be carried out on the following equipment for 100% of the specified capacity and desired output.

- i. Trash removal screen,
- ii. De-sliming Hydrocyclones,
- iii. Attrition Scrubber,
- iv. Thickener
- v. Filter press

9.1.2 Performance Guarantee Test (PGT) shall be carried out by the Selected Bidder on completion of integration of the de-sliming system with HUS. Selected Bidder shall demonstrate the performance of de-sliming system at a throughput of 180-220 tph in HUS, through meeting the following process deliverables

- i. Free slime content in HUS concentrate should be less than 0.2%
- ii. Free slime content in HUS Tails should be less than 1.0%
- iii. Recycled process water from thickener/filter press shall be clear with less 100ppm of Slime particles.
- iv. The filter cake generated shall have moisture content of 30% maximum.

9.1.3 Performance Guarantee Test (PGT) shall be carried out by the Selected Bidder in presence of the IREL only after the offered equipment supplied have operated satisfactorily as per the operating parameters given in the technical specification.

9.1.4 For each equipment, load test shall be carried out for 100% of the rated capacities for a minimum period of five days for minimum duration of 8 hours/day. The hours of load test will be taken in to account only if the plant has run for a minimum of 4 hours at a stretch. This is applicable unless otherwise specifically not mentioned in the technical specification.

9.1.5 During operations of the equipment at no load and at full load, performance of all the drive shall be checked in respect of current drawn by the motors, temperatures rise, vibrations, gear box noise and its heating, bearing heating etc. with respective rated values.

9.1.6 The Electrical & automation system along with all its auxiliaries installed under the subject package is deemed to have cleared the PG test if performance of the equipment and system and subsystem is found satisfactory.

9.1.7 The Selected Bidder shall submit to the IREL a mutually agreed upon Procedural Protocol with details of the Performance Guarantee (PG) Test, PG Test Procedures and PG Test Schedules for the demonstration of Performance Guarantee.

9.1.8 Supervision and responsibility for PGT shall lie with the Selected Bidder.

- 9.1.9 During the PG test, if there are interruptions because of the reasons attributable to IREL, the duration of PG test shall be extended by the duration of interruptions to enable PG test for 5 days. However, if during the test runs, there is an interruption exceeding 1 hour due to reasons attributable to the Selected Bidder, e.g. Equipment breakdown, resource mobilization etc. the PG test will be discontinued. The PG test shall be repeated by the Selected Bidder on mutually decided date by both the parties.
- 9.1.10 If even with two repetitive tests, the performance values are not reached for reasons attributable to Selected Bidder, he shall undertake at his own cost such modification or replacement as are considered necessary to obtain the performance values stipulated in this ToR & guaranteed by him. The responsibility to demonstrate performance guarantee values shall continue to remain with the Selected Bidder till the PG parameters are successfully established.

10 Operation and Maintenance Assistance

Operation & Maintenance of the modified plant need to be demonstrated by the contractor as follows

10.1 Operation Assistance

During the 3 months period after commissioning, the bidder shall give training to Engineers, Operators and Technicians on the Operation & Maintenance aspects. In the performance establishment period, the bidder shall depute competent technical person round the clock for Operational assistance (at least one person in every shift).

10.2 Maintenance Assistance

For Maintenance assistance, the bidder shall have a competent technical person at site from 9 AM to 5 PM & upon call during off time, till completion of warranty period. The technical person should be competent enough to handle the glitches as well as advise IREL staff rectifying the fault and provide training to IREL Maintenance staff.

11 Implementation Period

- 11.1.1 The Selected Bidder shall complete the commissioning of all proposed installations/ circuits and associated facilities in this ToR within a period of Fifteen (15) months from the effective date. Level-II Network shall be updated monthly by the Selected Bidder and detail status/ delay analysis reports shall be submitted to IREL along with the Monthly Progress Report.

12 Other Obligations

12.1.1 The scope of work in the terms of reference and the technical specification mentioned in this request for proposal is only indicative. The scope of work is to implement the slime handling system in the existing HUS circuit to achieve slime removal in feed to spiral, slime removal in HUS output, de-watering & de-sliming in tailing stream, disposal of slime in cake form and clean process overflow water for reuse as per process deliverable. Hence, the additional works if any associated and incidental for the satisfactory implementation of the project is in the scope of the contract.

13 Process Description

13.1 HUS circuit:

- 13.1.1 The HUS circuit is designed to handle 220 tph of raw sand. Raw sand is fed through a belt conveyor to mixing chamber and process water is added to make slurry. This slurry is fed to existing revolving trash removal screen (Trommel) by gravity.
- 13.1.2 Trommel screen is erected over a RCC tank (tank 1), which collects the undersize fraction of the trommel. Oversize fraction of trommel is discharged into the trash collection pit.
- 13.1.3 The process water is drawn from HUS settling pond (Pond-3) by use of three water pumps with negative suction.
- 13.1.4 The HUS circuit consists of 3 stages of Stage Spiral Operation viz. Rougher, Cleaner and Re-cleaner for enrichment of Heavy Minerals to 90% grade.
- 13.1.5 The rougher spiral shall consist of 4 banks of spirals with individual distributor of each bank. A total of 120 starts of rougher spiral comprises of two banks each of 36 starts and 24 starts (2*36 & 2*24).
- 13.1.6 Output (con-A) fraction of Re-cleaner Spiral contains 90.0% HM and is at present pumped to HUS output yard. Around 35 tph of the said fraction is expected to be generated from HUS circuit.
- 13.1.7 The overflow process water from HUS flows to the settling pond (Pond-1) through an open channel.

13.2 Screen for Trash removal:

- 13.2.1 The existing trommel screen shall be dismantled, existing mixing chamber shall be replaced and the proposed screen of 250tph capacity for trash removal shall be installed along with all accessories and spray water pipes.
- 13.2.2 The proposed screen undersize fraction shall be collected in the existing tank 1, oversize fraction in the trash pit and suitable capacity pump to be installed in the tank 1 for pumping the slurry to Stage-I cluster.

13.3 Slime Removal system for feed to HUS:

- 13.3.1 The proposed slime removal system of HUS is envisaged to have minimum of 3 stages of de-sliming hydrocyclones.
- 13.3.2 The Stage-I hydrocyclones shall be a cluster and to be installed above the existing MS slurry holding constant pulp density (CPD) tank (tank 2).

- 13.3.3 Underflow collection launder of the hydrocyclone cluster is to be discharged to the tank-2 and overflow collection launder shall discharge to a common overhead pipeline which shall be designed to accommodate overflow from Stage-II and Stage-III as well.
- 13.3.4 The Stage-II hydrocyclones shall be a cluster and is to be installed above a new CPD tank (tank 3) of suitable capacity, both under the scope of supply.
- 13.3.5 Underflow collection launder of the hydrocyclone cluster is to be discharged to the tank-3 and overflow collection launder shall discharge to the common overhead pipeline.
- 13.3.6 The Stage-III hydrocyclones shall be installed above the rougher spirals' distributor such that underflow fraction is collected in it and overflow of the hydrocyclones shall discharge to the common overhead pipeline.
- 13.3.7 The proposed 3-stages of de-sliming hydrocyclone shall be adequate to removal slime in HUS feed prior to spiral feeding as per the performance guarantee clause.
- 13.4 Slime removal system for HUS output
 - 13.4.1 The HUS output fraction, Con-A shall be fed to the proposed attrition scrubber through a hydrocyclone in order to ensure the required pulp density.
 - 13.4.2 The proposed attrition scrubber shall have a ideal retention time to remove slime coating on the surface of Con-A fraction minerals as per the performance guarantee clause.
 - 13.4.3 The proposed attrition scrubber shall include a CPD tank with pumping system for handling its output fraction
- 13.5 Dewatering and de-sliming of HUS tailing
 - 13.5.1 The proposed Hydrocyclones shall handle the tailing generated from HUS and shall remove 80-85% water along with available free slime from tailing stream.
 - 13.5.2 The proposed Hydrocyclones shall include the support structure and foundation for installation of Hydrocyclones.
- 13.6 Pumping station for process water
 - 13.6.1 The proposed slime removal system from HUS feed and output require increased supply of process water drawn from the settling pond. In order to meet the additional requirement of process water, proposed pumping station shall include the suitable capacity water pumps with drives and accessories and two water header pipelines from pumping station to HUS plant along with branch pipes to individual CPD tanks.
 - 13.6.2 The proposed pumping station shall house the pumps in positive suction and an EOT/Monorail crane for handling the pumps and motors.

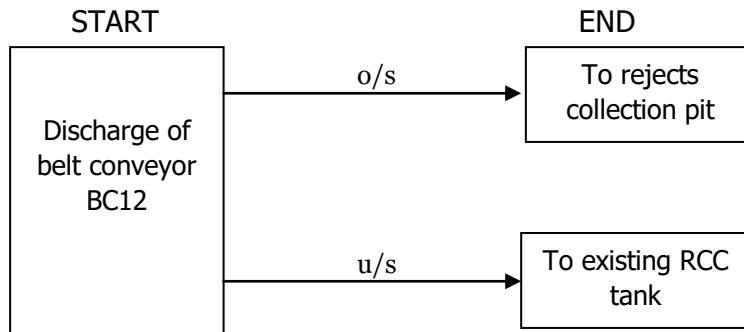
13.7 Thickener & Filter press System

- 13.7.1 The proposed thickener shall contain feed collection well to accommodate process overflow from 3-stage hydrocyclones by gravity (stream-I) and CPD tanks by pumping (stream-II), Flocculant dosing system, peripheral collection launder and sludge collection pit.
- 13.7.2 The overflow water of thickener shall be clean, diverted to Pond-1/2 for reuse and sludge shall be pumped to filter press system for disposal of slime in cake form. Suitable Filtration system shall be used, if required, to achieve the performance guarantee.
- 13.7.3 The proposed Filter press system shall treat the sludge from the thickener and produce slime in cake form for disposal.

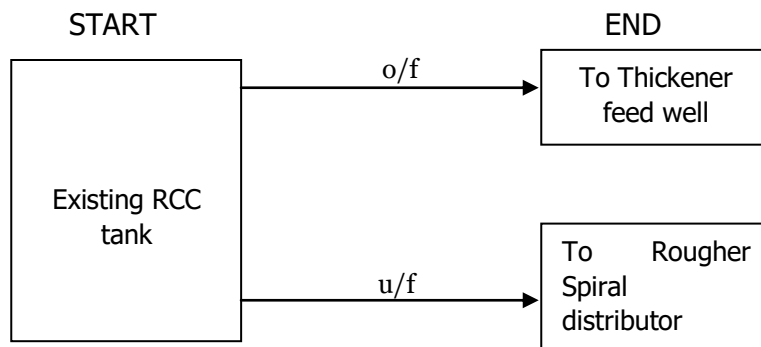
Part-II

Annexure-I: Battery Limit

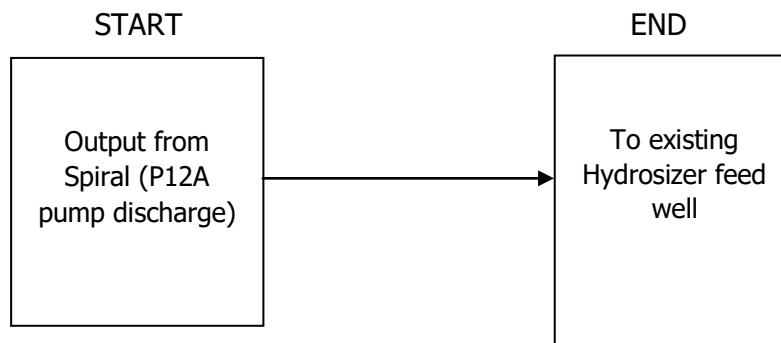
Battery Limit of Screen for trash removal



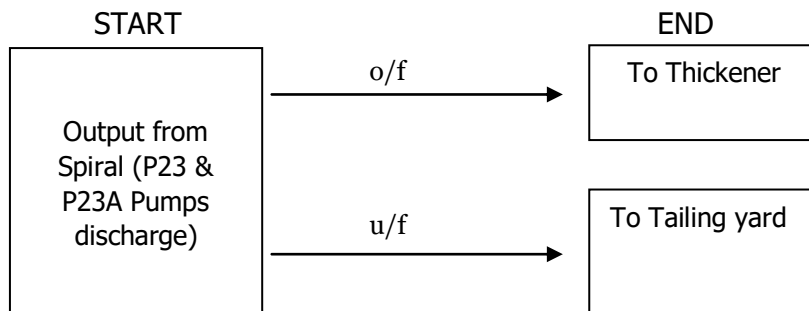
Battery Limit of slime removal system for HUS feed



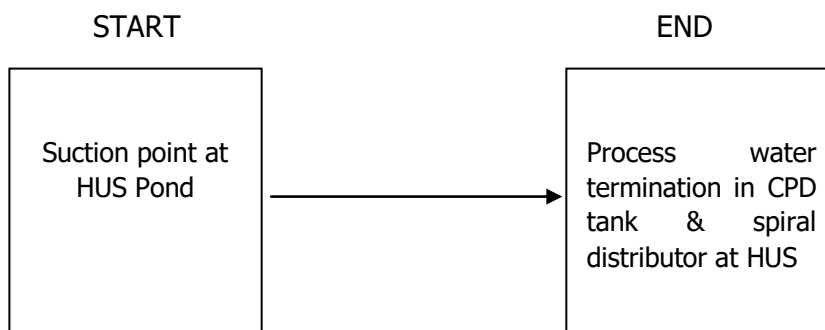
Battery Limit of slime removal system for HUS output



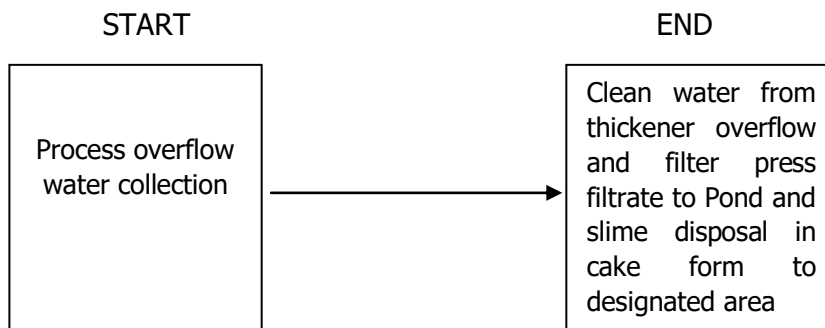
Battery Limit De-watering, de-sliming in tailing stream



Battery Limit for Pumping Station



Battery Limit for Thickener and Filter Press System



ANNEXURE-2: TECHNICAL SPECIFICATION

1 Technical Specification of Process Equipment Part

1.1 General Scope for Process Equipment

1.1.1 Following is the general scope for all process equipment under scope of work of the Agency:

- Supply, installation and commissioning of all the equipment.
- The Agency has to ensure that all the equipment meet the specification mentioned herein.
- The Agency has to procure the equipment of specific make, if any mentioned in the specification.
- It is the sole responsibility of the Agency to obtain the desired parameters of the equipment
- Party has to provide the safe operating procedures during installation and operation.

1.1.2 The Technical Specification of the Process Equipment are given below.

1.2 Hydrocyclones

- Make and manufacture: The manufacturers of hydrocyclones shall be from reputed one who has executed supply of hydrocyclones of minimum the same capacity to mineral sand industry as proposed for supply. Copy of PO and satisfactory completion certificate for the same towards proof has to be submitted.

1.2.1 The scope of work includes supply, installation and commissioning of hydro cyclones along with accessories as per the technical specification mentioned below:

1.2.2 The general duty conditions of de-sliming hydro cyclones for Mineral Separation plant are given below:

SL No.	Description	Stage-I	Stage-II	Stage-III
1	Make	Metso/ FLSmidth / Weir Mineral/Equivalent		
2	Feed material	Beach sand minerals		
3	Type of Feed	Sand slurry		
4	Type of Cyclone	De-sliming		
5	Quantity	Cluster of Min. 8	Cluster of Min. 8	4 Nos.
6	Feed			
	- Solid loading rate,t/hr	As per design		
	- Slurry, m3/hr	As per design		
	- Pulp Density (% Solids)	As per design		
	- Specific gravity	3.0		

	- Slurry Density, tons/Cu.m	1.2	
7	Desired Under Flow		
	- Solid loading rate, tonnes/hr	As per design	
	- Slurry, m3/hr	As per design	
	- Pulp Density (% Solids)	70.0	
	- Specific gravity of solid	3.0	
	- Slurry Density, tonnes/m3	1.9-2.1	
8	Desired Over Flow		
	- Solid loading rate, tonnes/hr	Nil	Nil
	- Water, m3/hr	As per design	
9	Cyclone MOC	MS casing with replaceable rubber liners	
10	Preferred Lining	Liners should be molded replaceable liners having 50 Shore A hardness	
11	Cyclone slurry Inlet	Curved or spiral entry for Laminar flow	
12	Feed temperature,0C	Ambient	
13	Cluster and Its components	The clusters consist of manifold, overflow and underflow launders, Pressure gauge/transmitter, and Isolation valves for each cyclone in the cluster assembly. All wetted parts must be hot vulcanizations with natural rubber of 3mm thickness.	
14	Feed Particle Size		
	Size (in microns)	Weight % Retain	
	600	1.34	
	425	7.86	
	300	25.08	
	212	22.02	
	150	12.88	
	106	7.70	
	75	2.28	
	45	0.81	
	-45	20.03	
15	Simulation data	The Bidder shall have to submit the expected performance of hydrocyclone cluster/ hydrocyclone based on simulation data considering the feed particle size distribution, solids recovery percentage in both overflow and underflow.	

1.2.3 Equipment Particulars

- i. The sand slurry is highly abrasive in nature and the material of construction/sizing should be suitably selected.
- ii. Size of the cyclone shall be selected to ensure optimum pressure drop and efficiency. Each cyclone shall include, but not limited to the following:

- iii. Tangential wrap around or curved entry, cylindrical upper section, conical lower section, a differential gauge pressure to measure pressure drop across the unit and flow directing devices shall be provided.
- iv. A pressure gauge shall be mounted to the top of the feed distributor.
- v. The manifold design shall be convenient for removal of any hydro cyclone without disturbing other hydro cyclones or disassembling the manifold system
- vi. An individual isolating valve shall be provided for each hydro cyclone.
- vii. Necessary supporting arrangements for the feed distributor, hydro cyclones, overflow and underflow collection launders shall be provided along with the manifold assembly.
- viii. The proper design & selection of slurry distribution including slurry distribution pipe lines other equipment and all connected accessories are within the scope of work. This information shall be furnished along with the offer.

1.3 Trash Screen

- 1.3.1 The scope of work includes supply of one number of Trash Screen along with its accessories including installation and commissioning as per the technical specification mentioned below:

Make and manufacture: The manufacturers of trash screen shall be from reputed one who has executed supply of trash screen of minimum 200tph capacity, mesh size range to mineral sand industry as proposed for supply. Copy of PO and completion certificate for the same towards proof has to be submitted.

- i. Specification:
 - a) Make: Metso/ FLSmidth/ WEIR Minerals/Equivalent
 - b) Type of wet vibrating screen: High Frequency linear stroke vibrating motion, Horizontal type
 - c) Quantity: 01 number
 - d) Materials to be handled: Slurry of highly abrasive Beach Sand minerals.
 - e) Capacity: 250 tonnes/ hour dry solid.
 - f) Feed % of solid: 20-35 %
 - g) Bulk density of material: 2.6 t /cu.m.
 - h) Grain size: desired feed materials size will be 75 to 600 micron (Maximum).
 - i) Moisture: Wet.
 - j) Temperature: Ambient.
- ii. Screen Details:

- a) Welded and bolted steel structure made from killed steel plates and sections (Size of the screen should be of suitable for the existing RCC tank which shall collect the under size fraction).
- b) The screen is to operate in open condition.
- c) Screen media: Pin and sleeve mounting type steel reinforced polyurethane deck of 1' x 1'.
- d) Aperture in the screen panel: 3 – 3.5 mm, square aperture
- e) Type of motion: Linear.
- f) Screen deck frame and beams are to be protected from abrasion wear using cured rubber.
- g) Side walls made of 8 mm MS plate with rubber lining and sufficient stiffeners are to be given for long reliable services life.
- h) Feed box with rubber lining is to be provided for proper distribution of feed material across the total width of the screen deck.
- i) Under size fraction hopper should be rubber lined.
- j) Trash material discharge chute should be rubber lined.
- k) The throughput shall distribute over the complete screen deck area.
- l) The mineral sand with maximum water will pass through the screen and report at the undersize hopper. The coarse material like small pebble's, shells, grass and roots etc will discharge over the complete width of the screen with minimum water
- m) The screen shall be built to stand the impact of stones/lumps of size 150mm that may report in the feed occasionally
- n) Spare panels of equal numbers required for one time replacement shall be supplier along with screen.

1.3.2 Screen mounting and drive:

- i. The vibrating screen should be vibration- isolated and installed via rubber buffer at proper down slope in order to achieve the required performance.
- ii. Support legs are to be designed properly considering the wet operation, corrosive environment.
- iii. Drive (Linear Motion): suitable drive system is to be designed and provided in the vibrating screen considering wet operation.
- iv. Power supply: 415 V, 3 Phase 50 Hz.

- v. Spray water nozzle: required water header fitted with spray nozzles is to be provided in the machine and terminated at the machine end with a flange having dimension as per BS-10 table D. inner connection to the header of the spray nozzles has to be done by the bidder. MOC of the spray nozzles should be SS 304 and preferably they should be replaceable.
- vi. The detailed GA drawings have to be submitted by the bidder.

1.4 Slurry holding CPD tank

- 1.4.1 The scope of work includes supply of slurry holding CPD tanks along with its accessories including installation and commissioning as per the technical specification mentioned below:
- i. Material of construction of the CPD tanks shall conform to IS 2062/2011 and of minimum 8mm thick plates
 - ii. Tanks shall be of suitable holding capacity equivalent to minimum 3 minutes of the respective pump's flow rate.
 - iii. All wetted parts of the tanks shall be rubber lined by hot vulcanization/PU lined(minimum 6mm thick) including the boil box
 - iv. Tanks shall include pump suction & drain nozzles and overflow launder
 - v. Platform, handrails and approach ladder to be provided to facilitate upkeep of the tank-3 of Stage-II
 - vi. The detailed GA drawings have to be submitted by the bidder.

1.5 Attrition Scrubber

- 1.5.1 Scope of work includes supply including accessories along with installation and commissioning as per the technical specification mentioned below

Attrition Scrubber	Parameters
Make	Metso/ FLSmith/Vmix/IMT/Equivalent
Capacity	35 tph
Duty	Removal of coated slime content
Feed concentration	Minimum 65%
Feed hydrocyclone	De-watering type
No. of Cell	02 or as per design
Tank MOC	Carbon Steel with rubber liner(6mm)
Impeller MOC	Carbon steel with extra rubber liner at tip(12mm)

Impeller Type	Axial flow turbine type
Electrical motor specification	IE-3; VFD Compatible, 415 V; 4 pole ; 50 Hz ; IP 55
Control Panel	PLC compatible Panel with VFD of make Danfoss/ Schneider/ L&T/ Fuji
Make of Electrical motor	ABB/ Siemens/ Crompton Greaves
Working Volume	As per Bidder's Design
Retention Time	As per Bidder's Design
No. of impeller/cell	As per Bidder's Design
No. of blades/cell	As per Bidder's Design
Motor(s) Rating	As per Bidder's Design
Tank Detail	As per Bidder's Design
Operating speed	As per Bidder's Design

1.5.2 The equipment shall have provision for flushing to enable smooth restarting subsequent to power failure.

1.6 Process Water Pumping Station

1.6.1 Scope of work includes supply of water pumps including accessories along with installation and commissioning as per the technical specification mentioned below

S.No	Item	Details
1	Type	Horizontal split casing, Centrifugal
2	Flow rate	As per design
3	Total Head	30m
4	Make	Kirloskar
5	Minimum continuous flow at reduced speed	350 cu.m/hr for 30m head
6	Water Header	GI seamless pipes

- (i) Water Header pipes shall be GI Pipes conforming to IS:1239 PART-1(2004)/ IS:3589, Medium(Class-B) and Slip on flange, Material: Mild Steel, machined and drilled, as per ANSI, B16.5 CLASS 150, Fittings – Equal TEE & Butt weld Elbow (90 degree) as per ANSI, B16.9

1.7 Thickener & Filter Press

1.7.1 The scope of work includes design, supply, installation and commissioning of thickener as per the following duty conditions

- i. Feed rate to thickener: 1500-1700 m³/hr. of slurry
- ii. % solid in feed: 2 to 3.5 % w/w
- iii. Specific gravity: 2.8
- iv. Size of solid in under flow: less than 45μ
- v. Temperature of slurry: Ambient

Design, supply, installation and commissioning of the RCC tank thickener complete with all electrical, instrumentation, cabling, control panel, mechanical drives, and structural work etc. required for clarifier

- vi. The thickener system shall include a mixer for dosing the feed, feed well, bridge, rake lift assembly, hydraulic system, PP filter cloth, automatic filter plate shifting
 - vii. The filter press structure / body shall be of Carbon Steel, Q345 and sand blasted to Sa2½ grade, painted with one coat of zinc rich primer and two coats of high build smoke grey epoxy finish paint to withstand corrosive atmosphere.
 - viii. Heavy duty rake & rake drive mechanism, facility of auto lifting of rake on event of high rake load
 - ix. Electronic torque indicator of rake with data logger for torque
 - x. Rake high lift and lower down limit switch with trip facility of lifting/lowering motor
 - xi. Facility for manual lifting and lowering of rake on event of failure of rake lifting mechanism
 - xii. Alarm for high torque of rake in field as well as in control room
 - xiii. Non-contact type instrument to measure & display bed level of clarifier
 - xiv. Instrument to measure & display bed mass of clarifier, shall be installed in the flat bed portion of the clarifier nearer to cone
- 1.7.2 Online turbidity meter installed at the discharge of peripheral launder to measure & display clarity of overflow liquor in ppm/NTU with digital display
- 1.7.3 Scope of work includes supply, installation and commissioning of filter press along with fully automated accessories like bomb door & drip tray, plate shifter, cloth washer, core blowing, plate shaker etc and plate changing facility as per the technical specification mentioned below

S.No	Item	Details
1	Slurry Feeding	Centre of the feed plate
2	Type of Plate	PP (pure virgin) Recessed Top
2	No. of recessed plated	As per bidder's design
4	Plate Size	1500 x 1500 minimum

5	Pressure	Feed	8 bar min.
		Squeeze	20 bar min.
6	Filter Area		As per bidder's design
7	Filter Plate		As per bidder's design
8	Make		METSO/FLSmidth/Equivalent

1.8 Slurry Pumps

1.8.1 The scope of work includes supply of pumps along with its accessories including installation and commissioning as per the technical specification mentioned below:

SI No	Description
1	<p>Heavy duty Slurry Pump model, fitted with expeller type sealing arrangement Scope of offer: Bare shaft Pump, split casing type along with all required accessories and automatic lubrication system MOC: Impeller(5 vane closed) - Polyurethane having shore A hardness 80 Expeller - Alloy steel having core hardness more than 600 BHN Expeller ring - Natural rubber having shore A hardness 50 Frame Plate liner, Cover Plate liner& throat bush: Polyurethane Frame Plate, Cover Plate, Bearing Housing & Base –SG Iron Orientation: As per site condition</p>

1.8.2 Make: Weir Minerals/ Metso/ FL Smidth

1.8.3 Note:

- GA drawing of pump has to be provided by the bidder.
- Bidder has to provide maintenance manual, spare parts list and curve along with the supply of material.

1.8.4 Motors:

- The scope of work includes supply of Motors as per the make mentioned below along with its accessories including installation and commissioning as per the technical specification mentioned below. The design of the ratings of the motor shall be 20 % higher than the required size.

- ii. The scope of work includes supply of totally enclosed fan cooled squirrel cage induction motor with enclosure confirming to protection IP 55 foot mounted (B3) continuously rated (S1) suitable for 415 volts +/- 10%, 3 phase, 50Hz +/- 5 % frequency, AC supply ambient temperature 45 degree minimum class F insulation with temperature rise limited to Class-B and altitude less than 1000 M above MSL confirming to IS:12615:2011 with its latest amendments of the following KW and RPM compliance to IE3 for efficiency. All motors DE roller bearing and to be provided with space heaters. Terminal box should be on the top of the motors.
- iii. Make: Crompton Greaves/ Siemens/ ABB/ Bharat Bijlee/ Kirloskar.

1.9 HDPE Pipes

1.9.1 The scope of work includes supply of HDPE Pipes along with its accessories including laying, installation and commissioning as per the technical specification mentioned below:

Make and manufacture: The manufacturers of HDPE Pipes shall be reputed one who has executed supply of HDPE Pipes of the maximum size during last two years as specified below. Copy of PO and satisfactory completion certificate for the same towards proof has to be submitted.

S.no	Specification	Pipe OD	Length of pipe	Grade	Working pressure Kg/cm ²	Minimum Length required in m
1	HDPE Pipes with long neck ends and GI slip on flanges at both ends for Slurry feeding to Stager-I	As per design	6 metre	PE 100	10	30
2	HDPE Pipes with long neck ends and GI slip on flanges at both ends for Slurry feeding to spiral from tank-I (bypass arrangement)	As per Design	6 metre	PE 100	10	72
3	HDPE Pipes with long neck ends and GI slip on flanges at both ends for slurry feeding to Stage-II	As per Design	6 metre	PE 100	10	18
4	HDPE Pipes with long neck ends and GI slip on flanges at both ends for slurry feeding to Stage-III	As per Design	6 metre	PE 100	10	100
5	HDPE Pipes with long neck ends and GI slip on flanges at both ends for handling slurry output of attrition scrubber	As per Design	6 metre	PE 100	10	12

6	HDPE Pipes with long neck ends and GI slip on flanges at both ends for handling process overflow (stream-II)	As per Design	6 metre	PE 100	10	90
7	HDPE Pipes with long neck ends and GI slip on flanges at both ends for thickener and filter press system	As per Design				

1.9.2 Note:

- Material of the flange should be as per IS 226 and hot dip galvanizing as per IS 2629:1985
- The HDPE pipe shall be used for carrying highly abrasive and corrosive sea sand minerals in slurry form.
- Pressure testing of pipe should be carried out as 1.5 times the working pressure on random basis on pipes selected by IREL representative at your works and material test certificate should be submitted along with the material.
- Pipe should be made of 100 % virgin material and MTC of the raw materials to be submitted to IREL.
- The above quantities are tentative only. Successful Bidder to finalize the exact quantity required.

1.10 Wire Inserted Hoses:

- 1.10.1 The scope of work includes supply of Wire Inserted Rubber (WIR) Hoses along with its accessories including installation and commissioning as per the technical specification mentioned below:

Make and manufacture: The manufacturers of WIR Hoses shall be reputed one who has executed supply of WIR Hoses of the maximum size as specified below during last two years. Copy of PO and satisfactory completion certificate for the same towards proof has to be submitted.

SL. No.	Description	Details	ID & Minimum Length Required in m
1	Wire inserted rubber hose with rubber lined inbuilt metallic flanges on both ends. ID (mm) :125 mm/150mm/200mm	The hoses will be used for carrying highly abrasive and corrosive sea sand minerals in slurry form. Inner tube shall be 8mm thick of soft gum natural rubber of shore hardness $45^0 \pm 5^0$ shore'A' hardness. It shall be	As per design

Length (metres):6000 m Working pressure (kg/cm ²):06 Testing pressure (kg/cm ²):09 Bending radius (mm):600 No. of plies/braids of the hoses: as applicable to the pressure rating Flange details Outer diameter (mm):260/310/380 PCD (mm):212/274/324, Hole diameter (mm):18/18/18 No. of holes:08 for all Thickness (mm):20 for all	seamless and continuous from one flange to other flange. Rubber hose shall be reinforced with nylon cord of high tensile strength and high tensile steel wire for light weight and high flexibility. An EPDM rubber outer cover of 02 (two) mm thickness shall be provided for sea weather resistance. Galvanized back up flanges of 8 mm thickness shall be provided for all the inbuilt flanges. Testing of hoses shall be carried out for working pressure, testing pressure and bending radius as mentioned below. Test certificate shall be furnished along with the hoses. Working pressure = 6 kg/cm ² Testing pressure = 9 kg/cm ² Bending radius = 1300 mm	
--	--	--

1.10.2 Note:

- i. Inner tube shall be of 8 mm thickness continuous.
- ii. Inside of the coupling shall be of knurled type for the firm grip of the hose.
- iii. Hose outer surface may be plain.
- iv. Pre dispatch inspection may be carried out at party's work before dispatch as per inspection clause of tender.

1.11 Valves:

1.11.1 The scope of work includes supply of valves of reputed make along with its accessories including installation and commissioning as per the technical specification mentioned below:

1.11.2 Ball Valves:

Sl.no	Description	Numbers
1	Lever operated three piece design full bore screwed end stainless steel ball of Size : 15 mm	As required

2	Lever operated three piece design full bore screwed end stainless steel ball of Size : 25 mm	As required
---	--	-------------

i. Technical Specification:

- a) MOC: Body: ASTM A 351 GRFC8M/SS 316
- b) Ball: SS316
- c) Seat and seal: PTFE
- d) MFG Standard: BS5351
- e) End connection: screwed end to BSP (F)
- f) Hydro test pressure: Body-30 kg /s q.cm Seat-20 kg / sq.cm.

1.11.3 Gate Valves:

SL. No.	Description	Numbers
1	Gate valve 40 mm Body material Stainless steel female thread at both end.	As required
2	Manual wheel operated knife edge gate valve DN 100 (4")	As required
3	Hand Lever copper steel with locking arrangement knife gate valve DN 150 (6")	As required

i. Technical Specification:

Model	64 UC, Unidirectional knife valve.
Application	Highly abrasive slurry or sand & water
Operating Pressure	10 Kg/cm ²
Flange Holes	ANSI B 16.5
Body	ASTM A216 Gr. WCB
Gate:	ASTM A240 SS316
Yoke	ASTM A216 Gr WCB / IS2062
Stem	SS410

1.11.4 Miscellaneous:

- i. Welding:
 - a) All welding work shall confirm to IS-816 and the welding electrodes shall conform to IS-814 and IS-1395
 - b) The tolerances of fabrication of steel structures shall be in accordance with IS: 7215
 - c) All the welds shall be continuous fillet weld. The weld metals deposited shall be free from cracks, slag inclusion, porosity, cavities and other deposition fluids.
- ii. Painting – After fabrication and erection of platforms, structural etc. shall be cleaned thoroughly and applied two coats of Zinc chromate primer and followed by two coats of chlorinated rubber paint smoke grey for platforms and golden yellow for handrails as per the requirement of the IREL. Epoxy primer and Epoxy black/grey paint of two coats shall be applied on the surface of wetted structural.

2 CIVIL SPECIFICATIONS IN GENERAL

- 2.1 The works to be carried out by the Contractor for design, dismantling, Supply, erection, commissioning, repair, testing etc of Civil related works of the contract shall include, but not be limited to the following;
- 2.1.1 Specifications of materials and workmanship shall be as described in the Latest Central Public Works Department Specifications (CPWD Specifications) including amendments, unless otherwise specified. These CPWD Specifications shall be deemed to form part of this Contract. The Contractor shall procure and maintain copies of the CPWD Specifications at site for reference.
 - 2.1.2 For works where no specification is laid down in the Contract as aforesaid, such works shall be carried out in accordance with the specifications decided by the Engineer-in Charge. The specification mentioned in relevant area shall also form part of technical specification.
 - 2.1.3 The specifications submitted by EPC contractor for civil works shall be supplementary to the specifications contained in the CPWD specifications/specification. Where at variance, these particular Specifications shall take precedence over the provisions in the CPWD Specifications/ specification
 - 2.1.4 The Cement required for the entire project work shall be under contractor's scope and all the rates for item involving cement as ingredient must be quoted inclusive of cost of cement. Only Ultra Tech, Dalmia, Ramco, ACC cement conforming to IS: 1489 (Part-I Fly ash based) shall be allowed to be used for work. Contractor has to produce relevant Test and batch certificate from cement manufacturer's for the cement brought to site. Only current batch of cement (at best two months old) shall be allowed to be used for work. Proper and safe custody and storing of cement at site shall be the responsibility of contractor.
 - 2.1.5 The design mix for minimum M30 Grade for RCC works has to be prepared by the Agency. (Grade of concrete with cement content will be decided based on exposure condition).
 - 2.1.6 Supply of Reinforcement steel (only TATA/RINL/SAIL make HYSD steel conforming to IS: 1786), structural steel (only TATA/RINL/SAIL make conforming to IS: 2062), to be used for work is under the scope of contractor and should be quoted accordingly. The diameter of the reinforcement steel and spacing shall be as per standard and taking into consideration of the total load.
 - 2.1.7 The security and safe custody of materials brought to site shall be responsibility of the contractor till handing over to IREL.
 - 2.1.8 In General Excavation work will be measured as per size of foundation and no extra payment will be made for working space, safe slope etc. and should be quoted accordingly.
 - 2.1.9 During excavation for foundations if water ingress persists the water has to be removed and proper care to be taken.

- 2.1.10 Earth work in Excavation below ground level for all kinds of works in all types of soil except soft rock and hard rock for all depth up to and inclusive of 3.5m including removal of vegetation, shrubs and debris, cutting and dressing of sides in slopes, leveling, grading and ramming of bottoms, dewatering of accumulated water from any source and keeping the surface dry for subsequent works and disposal or stacking of excavated material within a lead and lift as per site requirement, as directed including providing temporary supports to existing service lines like water pipes, sewage pipes, electric overhead and underground cables etc. all complete, but excluding shoring and strutting.
- 2.1.11 The foundation has to be designed and made in such a way that it should not harm the existing foundations nearby. Adequate gap as per the design has to be maintained between the existing / new foundations. Safe clearance from existing foundation has to be maintained, as per instruction of EIC.
- 2.1.12 RCC structures and foundations shall be of M30 grade design mix concrete unless otherwise mentioned in the contract.
- 2.1.13 All PCC works shall be of 1:2:4 (M15) Ratio unless otherwise mentioned in the contract.
- 2.1.14 All Brick work shall conform to 1:6 Grade unless otherwise mentioned in the contract.
- 2.1.15 All Plastering shall conform to 1:4 Grade unless otherwise mentioned in the contract.
- 2.1.16 All test as required for confirming the quality of the civil works such as done has to be made as per QAP submitted by EPC contractor.
- 2.1.17 Seismic zone, Cyclonic effect for IREL has to be taken care for all designs.
- 2.1.18 All the buildings have to be designed for structural stability confirming to relevant IS codes.
- 2.1.19 All tests to be carried out for ascertaining the quality of the work has to be done as per the relevant standards.
- 2.1.20 Proper Ventilation has to be maintained in all the buildings.
- 2.1.21 Electrical Buildings has to be made considering the electricity rules latest amendment.
- 2.1.22 Insert plate has to be made at each columns of minimum 200 mm x 200 mm size and the insert plate shall be in same level of the plastering.

2.2 Note

- 2.2.1 The Following points have to be considered during designing the plant.
 - i. All PCC shall be of minimum M 15 Grade however if higher strength is required as per the design/ drawing the bidder has to prefer the higher grade PCC.

- ii. All RCC shall be minimum design mix concrete - M30 grade however if higher strength is required as per the design/drawing the bidder has to prefer the higher grade RCC.
- iii. Structural stability wind load has to be calculated as per IS 875 (Part.III) with its latest amendments as plant is situated in a cyclonic prone Area.
- iv. Seismic design has to be as per IS: 1893 Part:IV.
- v. Reinforcement Steel has been considered as Fe 500D However the Agency has to carry out the corrosion rate analysis and consider higher grade if required as per the design. Type of reinforcement to be considered to satisfy ductility and corrosion effect.

2.3 PCC:

2.3.1 Scope of work: The general PCC works to be carried out by the Contractor, unless otherwise specified elsewhere in the contract, shall include, but not be limited to the following;

- i. All PCC shall be of M 15 Grade.
- ii. Earth work in Excavation below ground level for all kinds of works in All types of soil except soft and hard rock for a depth including removal of vegetation, shrubs and debris, cutting and dressing of sides in slopes, leveling, grading and ramming of bottoms, dewatering of accumulated water from any source and keeping the surface dry for subsequent works and disposal or stacking of excavated material within a lead & lift as per site requirement , as directed including providing temporary supports to existing service lines like water pipes, sewage pipes, electric overhead and underground cables etc. all complete, but excluding shoring and strutting. Excavation measurement shall be given strictly as per size of foundation only. No allowance for working space, side slope shall be given.
- iii. Backfilling with Excavated Soil & Ash below ground level for all kinds of works in All Types of soils and dressing of sides in slopes leveling grading and ramming of bottoms dewatering of accumulated water from any source and keeping the surface dry.
- iv. Preparing bed for PCC including cutting of bushes, small trees, cutting of earth, filling, compacting with roller up to 100mm depth with compaction as per instruction of EIC.

2.4 RCC:

2.4.1 The general RCC works to be carried out by the Contractor, unless otherwise specified elsewhere in the contract, shall include, but not be limited to the following;

2.4.2 Works to be done: All RCC decided by EPC contractor will be done as per specifications given by him.

- 2.4.3 All RCC Shall be minimum grade of design mix M30, unless otherwise mentioned. Following are the some of the major works to be carried out by RCC but any other RCC work mentioned in the scope of work and also required for the satisfactory performance of the project activity are also to be covered in the scope of the work
- i. HUS - all foundation including Foundations for vibrating screen, hydrocyclones cluster and elevated pipe line support, attrition scrubber, pump station and MCC building, thickener & filter press etc.
 - ii. HUS - all works including Beams, columns, foundations of elevated pipe line at hydro cyclone cluster.
 - iii. HUS - all works including Beams, columns, and foundations of MCC building. The building size approx. is 8 m x 6 m.
- 2.4.4 Earth work in EXCAVATION below ground level for all kinds of works in All types of soil except soft and hard rock for all depth including removal of vegetation, shrubs and debris, cutting and dressing of sides in slopes, levelling, grading and ramming of bottoms, dewatering of accumulated water from any source and keeping the surface dry for subsequent works and disposal or stacking of excavated material within a lead & lift as per site requirement, as directed including providing temporary supports to existing service lines like water pipes, sewage pipes, electric overhead and underground cables etc. all complete, but excluding shoring and strutting. Excavation measurement shall be given strictly as per size of foundation only. No allowance for working space, side slope shall be given.
- 2.4.5 Backfilling with Excavated Soil & Ash below ground level for all kinds of works in All Types of soils and dressing of sides in slopes leveling grading and ramming of bottoms dewatering of accumulated water from any source and keeping the surface dry.
- 2.4.6 Providing and laying Reinforced Cement Concrete of minimum grade of design mix M30 for the building foundations (minimum Cement content shall be as per the EPC contractor Specifications) leaving pockets, recesses, vibrating, tamping, curing, testing (for leak-proofness) and rendering (if required to give smooth and even surface) in foundations, walls , beams, buttresses, columns, piers, slabs, tunnels, basements, storage bins, reservoirs etc. including cement wash (if no other surface application is specified) including the cost of Reinforcement, Shuttering and specified admixtures, all complete as specified and directed. All materials including cement to be supplied by the bidder.
- 2.4.7 Supplying and placing in position HIGH YEILD STRENGTH DEFORMED STEEL BARS REINFORCEMENT of Grade Fe500D TMT conforming to IS: 1786, for RCC work including transporting the Steel, straightening, cleaning, de-coiling, cutting, bending to required shapes and lengths as per details, binding wire at every intersection, supplying and placing with proper cover blocks, supports, chairs, overlaps, welding, spacers, fan hooks etc. for all heights and depths etc. all complete as directed. Supply of all the materials is in the scope of the party.

- 2.4.8 Precast elements: Manufacturing, transporting, supplying and erecting in position Reinforced Cement Concrete PRECAST ELEMENTS such as columns, beams, cover slabs, lintels, louvers, fins, shelves etc. of minimum grade of design mix concrete M30 with 20mm and down size graded crushed stone aggregates/gravel, for all leads, levels, shapes and thickness including all moulds, shuttering and centering, vibrating, tamping, curing, chamfering wherever required, finishing the top surface with cement mortar 1:3 (1 Cement : 3 Sand) to give a smooth and even surface, or nonskid finish as specified, providing lifting hooks, metal inserts, making holes pockets, (only M.S. inserts to be measured & paid) separately) transporting to site, erecting, leveling, aligning and fixing in position with cement mortar 1:3 (Cement : 3 Coarse Sand), breaking bricks and/or concrete surfaces and making good the same etc. all complete (excluding the Cost of Reinforcement) and as directed. All materials including cement supplied by the contractor.
- 2.4.9 Testing of RCC as per QAP mentioned by EPC contractor as per relevant IS / BS Standards towards curing of concrete cube for compressive strength for 7 days and 28 days curing, mix design and slump test.

2.5 Flooring Works:

- 2.5.1 The general Flooring works of minimum grade of design mix concrete M30 to be carried out by the Contractor, unless otherwise specified elsewhere in the contract, shall include, but not be limited to the following;
- 2.5.2 Major Works to be done including the following but not limited to
- i. HUS - all base flooring for vibrating screen, hydrocyclones cluster and elevated pipe line support, attrition scrubber, pump station, MCC building, thickener & filter press etc.
- 2.5.3 Earth work in EXCAVATION below ground level for all kinds of works in All types of soil except soft and hard rock for all depth including removal of vegetation, shrubs and debris, cutting and dressing of sides in slopes, leveling, grading and ramming of bottoms, dewatering of accumulated water from any source and keeping the surface dry for subsequent works and disposal or stacking of excavated material within a lead & lift as per site requirement, as directed including providing temporary supports to existing service lines like water pipes, sewage pipes, electric overhead and underground cables etc. all complete, but excluding shoring and strutting. Excavation measurement shall be given strictly as per size of foundation only. No allowance for working space, side slope shall be given.
- 2.5.4 Backfilling with Excavated Soil & Ash below ground level for all kinds of works in All Types of soils and dressing of sides in slopes leveling grading and ramming of bottoms dewatering of accumulated water from any source and keeping the surface dry.

2.5.5 Flooring with hardener topping as per EPC contractor specification. Minimum 52 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) and top layer 12mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix: 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed as per manufacturers specifications complete.

2.5.6 Testing of RCC as per as per QAP mentioned by EPC contractor relevant IS / BS Standards towards curing of concrete cube for compressive strength for 7 days and 28 days curing, mix design and slump test.

2.6 BRICK WALL:

2.6.1 The general Brick wall works to be carried out as per EPC contractor specification, unless otherwise specified elsewhere in the contract, shall include, but not be limited to the following;

2.6.2 Works to be done:

HUS – vibrating screen, hydrocyclones cluster and elevated pipe line support, attrition scrubber, pump station and MCC building, thickener, filter press etc

2.6.3 All Brick wall shall be of 1:6 Grade unless otherwise mentioned.

2.6.4 Providing and laying Brick work with bricks of minimum crushing strength 60 N/mm² in foundation and plinth in cement mortar 1:6 (1 Cement : 6 coarse sand) at all heights below and above plinth level including the cost of materials, labour, scaffolding/ staging, sampling & testing, soaking of bricks, cutting and laying of bricks, providing recesses, making openings of any shape & size, finishing the joints flush below ground level and raking out the joints above ground level, sealing the gap between masonry and soffit of beam/slab, embedding the fittings & fixtures, curing, etc. all complete as per EPC contractor specifications.

2.7 PLASTERING:

2.7.1 The general Plastering works of 1:4 Grade to be carried as per EPC contractor specification, unless otherwise specified elsewhere in the contract, shall include, but not be limited to the following;

2.7.2 Works to be done:

HUS – vibrating screen, hydrocyclones cluster and elevated pipe line support, attrition scrubber, pump station and MCC building, etc.

2.7.3 Providing and applying cement plaster, 12 mm thick/15 mm thick 1:4 ,at all surfaces except ceiling at all levels including surface preparation, staging, scaffolding roughening, finishing the surfaces, curing etc. complete .

2.8 Providing and applying cement plaster, 6 mm thick 1:3, at all surfaces of ceiling at all levels including surface preparation, staging, scaffolding roughening, finishing the surfaces, curing etc. complete

2.9 Dismantling Works:

2.9.1 This covers the general requirements of items involved in dismantling works. The dismantling work of the various civil and structural construction where the foundation, sump and MCC building of HUS area is to be constructed is required to be done and the debris are to be removed for providing level and clear site for work. The dismantling involves both manual as well as mechanical method of execution of work.

- i. Breaking and chiseling by manual as well as mechanical means without damaging any of the installations in the area
- ii. Shifting of debris to another location shown by EIC around a distance of 500 m.
- iii. Required scaffoldings, equipment have to be arranged by the Agency.
- iv. Proper care has to be taken that the adjacent buildings/ equipments/ structures are not damaged due to the dismantling works.
- v. Repair works if any required for the buildings and structures. (This covers various RCC as well as plastering work specified in the HUS area damaged structures along with other works needed for the completion and good look of the working area)
- vi. Plastering works if any required. (This covers various RCC as well as plastering work specified in the HUS area damaged structures along with other works needed for the completion and good look of the working area)

2.10 Reclamation Tank/RCC sump:

2.10.1 The design shall be totally RCC

1. The RCC sump-1no at HUS – (Size and design shall be decided by EPC contractor to meet the requirement) (However Size and design decided by EPC contractor to meet the requirement may be considered by EIC).

2.10.2 Technical Specifications & Special Conditions:

- i. Earth work in EXCAVATION below ground level for all kinds of works in All types of soil except soft and hard rock for all depth including removal of vegetation, shrubs and debris, cutting and dressing of sides in slopes, leveling, grading and ramming of bottoms, dewatering of accumulated water from any source and keeping the surface dry for subsequent works and disposal or stacking of excavated material a lead & lift as per site requirement, as directed including providing temporary supports to existing service lines like water pipes, sewage pipes, electric overhead and underground cables etc. all complete, but excluding shoring and strutting. Excavation measurement shall be given strictly as per size of foundation only. No allowance for working space, side slope shall be given.

- ii. Backfilling with Excavated Soil & Ash below ground level for all kinds of works in All Types of soils and dressing of sides in slopes leveling grading and ramming of bottoms dewatering of accumulated water from any source and keeping the surface dry.
- iii. Preparing bed for PCC including cutting of bushes, small trees, cutting of earth, filling, compacting with roller up to 100mm depth with compaction as per instruction of EIC.
- iv. Providing, mixing, tamping, placing, consolidating and curing Plain Cement Concrete (M-20) using Cement conforming to IS: 456 with necessary slopes as specified for foundations, grade slabs, ramps, sills, copings, etc.
- v. Providing and laying Reinforced Cement Concrete of GRADE M-30 as per the design mix for the building foundations (minimum Cement content shall be as per the design mix for M30 Specifications) leaving pockets, recesses, vibrating, tamping, curing, testing (for leak-proofness) and rendering (if required to give smooth and even surface) in foundations, walls , beams, buttresses, columns, piers, slabs, tunnels, basements, storage bins, reservoirs etc. including cement wash (if no other surface application is specified) including the cost of Reinforcement, Shuttering and specified admixtures, all complete as specified and directed. All materials including cement to be supplied by the bidder.
- vi. Testing of RCC as per as per QAP mentioned by EPC contractor, relevant IS / BS Standards towards curing of concrete cube for compressive strength for 7 days and 28 days curing, mix design and slump test.
- vii. Supplying and placing in position high yeild strength deformed steel bars reinforcement of Grade Fe500D TMT conforming to IS:1786, for RCC work including transporting the Steel, straightening, cleaning, de-coiling, cutting, bending to required shapes and lengths as per details, binding with 18 SWG black soft annealed binding wire at every intersection, supplying and placing with proper cover blocks, supports, chairs, overlaps, welding, spacers, fan hooks etc. for all heights and depths etc. all complete as directed. Supply of material is in the scope of the party.
- viii. The inside and top edges of the tanks/sumps to be plastered: cement plaster shall have to be applied for thickness of 12mm thick at 1:4 ratio including surface preparation.

2.10.3 Painting Works

- i. The general Painting works (inside and Outside) to be carried out by the Contractor, unless otherwise specified elsewhere in the contract, shall include, but not be limited to the following;
- ii. Works to be done:
 - a) HUS- MCC building.

- iii. All the steel Structures has to be sand blasted (Nearing to white metal) and painted with a single coat of red primer CRB base soon after sand blasting and prior to start of fabrication work. After completion of steel structural construction work 4 coats for CRB / 3 coats of paint for Epoxy has to be painted to all fabricated structural without any exception as per the DFT mentioned in the table below.

Description	DFT in microns
1)CRB base Primer Red (1 coat)	35 - 40
2)CRB based Zn. Phosphate Primer (1 coat)	35 - 40
3) CRB based MIO (1 coat)	90 - 100
4) CRB Finish	35- 40
(or)	
1) Epoxy based primer (1 coat)	35 - 40
2) Epoxy based MIO (1 coat)	75 - 90
3) Coal Tar Epoxy Finish (1 coat)	90 - 100

2.11 Civil Buildings:

- 2.11.1 New work (two or more coats) over and including water thinnable priming coat with cement primer
- 2.11.2 New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @2.20kg/10 sqm.
- 2.11.3 Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.
- 2.11.4 Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour. (Two Coats).

2.17.5 The painting of civil building will be decided by EPC contractor which will provide desirable finishing work.

2.12 Drain:

1. Drain has to be decided by EPC contractor duly Engineering based on expected discharge. Drain has to be made of RCC.

2.13 Various electrical MCC cabin and control room HUS

2.13.1 Complete design and approval of the drawings of the civil structures are in the scope of party complying to the wind load condition and seismic zone condition applicable. The following are some of the points to be included in the scope for the design of the buildings. The design is to be checked by a Charter Engineer. The tentative drawings of the building (Lay out and different views) to be submitted along with offer.

2.13.2 The major scope of work involves but not limited to excavation, PCC, foundation, refilling, beams and columns, brick works, grills, windows and doors, shutters, staircases, insert plates in columns and beams, roof casting, flooring, RCC works, plastering, Aluminum glass windows, cutout for the cable in and out, drains for oil pit, cutouts for exhaust fans, concealed wiring provision, ceiling fan fixing, double door for each room etc whose technical specification has already been explained. The space and floor detail has been explained.

- i. The detail floor area is mentioned in the tentative drawings.
- ii. Stair case is to be provided to all the floors including the roofs on both sides
- iii. All the floors for control room shall be plastered with necessary finishing
- iv. Floors shall have cutouts and drains in the ground floor for cable entry as per instruction of EIC
- v. Insert plates shall be placed on the columns for facilitating welding at height difference of 1m and the face shall match the surface.
- vi. Day lighting, ventilation and functional requirement to be decided by EPC contractor as per relevant codal provision & statutory requirement. (Indian standard code IS-3103, 2440 & SP-32).
- vii. Holes for exhaust fan to be provided
- viii. For rooms concealed wiring provision and ceiling fan fixing p[rovision shall be there
- ix. All the doors to the rooms shall be of MS steel
- x. On side of each PANEL ROOM shall have shutter provision of r inserting nd removal of panels of appropriate bigger opening
- xi. Parapet wall to be provided above each of the control room top floor and all the windows shall have adequate roof of RCC coverage/extension to avoid rain entry
- xii. Each of the rooms shall have double entry

3 TECHNICAL SPECIFICATION OF ELECTRICAL PART

3.1 Electrical Specification in General

3.1.1 The specifications furnished in the tender is of general nature only and it is the responsibility of the bidder to design, supply, install, commission and put in operation of the equipment and services required for the satisfactory performance of the installation. All the items of equipment required for the safe and satisfactory operation of the installation shall be supplied and installed by the bidder. In the absence of any technical specification of any component, the applicable IS code, NEC code, Indian Electricity Act and Rule, IEC code shall be applicable only with the consent of IREL.

3.1.2 The intent of this specification is to define the scope & requirements for the design, manufacture, supply, installation, testing and commissioning of the electrical equipment /systems like.

- i. LT Power & Control cables,
- ii. Motor control centers,
- iii. Capacitor banks,
- iv. Plug and sockets, Push button stations,
- v. Cable trays,
- vi. Insulation mats
- vii. Miscellaneous items like gland, socket, junction box, pvc conduit, cable joint kit etc
- viii. Cabling,
- ix. Internal electrification,
- x. Electrical earthing,
- xi. Lighting,

3.1.3 Cables Technical Specifications

- i. LT 1.1kv grade cables:
 - a) Power cables for use on 415 V system shall be of 1100 volt grade,
 - b) Aluminum conductor for higher capacity motors power cables, 1.5 sq.mm 4 core control cable for remote switch, and Copper conductor (for 2.5sqmm 3core lighting cables),
 - c) Stranded/multi strand,
 - d) XLPE insulated, PVC sheathed,
 - e) Round GI wire armoured and overall PVC sheathed,
 - f) As per IS: 7098 (Part I) amended up to date.

- g) The cross section and size of cable conductors shall be as per specification
 - h) Colour of the outer sheath shall be Black.
 - i) Manufacturers Routine Test reports/ test certificates (Type test report may also be submitted) shall be submitted for all supplied cables.
 - j) All cables shall be ISI marked.
 - k) All conductor insulation shall have distinct colour code(R, Y, B, N) as per IS and marking on the cables to be provided along with length identification marks in meters
 - l) The design and construction of 1.1kV XLPE Cable shall be of Cable Code A2XFY-2XFY or A2XWY-2XWY for smaller size cable.
 - m) Make of cables: Gloster, Havells, Torrent, Universal, CCI, Polycab,. Make to be specified by bidder in offer.
- ii. Control Cables
- a) Control cables for use on 415 V system shall be
 - b) FRLS type 1100 volts grade,
 - c) copper single conductor, PVC insulated, PVC sheathed,
 - d) GI round wire armoured and overall PVC sheathed
 - e) Strictly as per IS: 1554 (Part I) amended up to date.
 - f) The design and construction of Control Cables Cable shall be of Cable Code YFY.
 - g) The size of these cables shall be 2.5 Sq.mm, 4core.
 - h) All cables shall be ISI marked
 - i) All conductor insulation shall have distinct colour code as per IS and marking on the outer sheath of cables provided along with length identification marks in every meter throughout the length
 - j) Conductor insulation shall have identification no (1, 2, 3, ---9 at every 1meter distance)
 - k) Make of cables: Finolex, RR, Lapp, Havells, Gloster, poly cab, universal
 - l) Make to be specified by bidder in offer.
 - m) Manufacturers Routine Test reports/ test certificates (Type test report may also be submitted) shall be submitted for all supplied cables.
- iii. Note:
- a) Party has to make detail schedule of the various cables to be used, size, type as per technical specification, length of cable etc and accordingly action to be taken.

Tentative Cable Schedule						
Sl no	Cables		Size& No of cores		cu/al	approx length in meter
	From	To				
1	MCC5H	MCC6H	400 sq.mm	3.5c	aluminium	25
2	MCC6H	P1A motor	As per Design	3.5c	aluminium	25
3	MCC6H	P1B motor	As per Design	3.5c	aluminium	15
4	MCC6H	P2A motor	As per Design	3.5c	aluminium	25
5	MCC6H	P2B motor	As per Design	3.5c	aluminium	25
6	MCC6H	Attrition Scrubber Drives	As per Design	3.5c	aluminium	45*2
7	MCC6H	Stream-II pump motor	As per Design	3.5c	aluminium	150
8	MCC7H	Water Pumps	As per Design	3.5c	aluminium	20*3
9	MCC7H	EOT	As per Design	3.5c	aluminium	20
10	MCC7H	Vertical Pump motor	As per Design	3.5c	aluminium	20
11	MCC7H	Motorized Gate Valves	As per Design	3.5c	aluminium	15*3
11	MCC7H	Thickener & Filter Press system	As per Design			

3.1.4 MCC Technical Specifications

- i. Scope of work: Design, engineering, supply, installation, testing and commissioning of the following
 - a) 1 nos MCC of Slime removal system
 - b) 1 nos MCC of Pumping station, thickener & filter press
- ii. General

Sl No	Description	Incomer	Bus Coupler	Control Transformer	TENTATIVE Outgoing Feeders	Power Outlets	Bus Duct
1	MCC-6H of Slime Removal system	630A MCCB	----	2KVA-1no 415/110 AC	04 nos motor control feeders with VFD and 2 nos of FASD – Rating as per bidder's design	1nos 250A	----

2	MCC-7H of Pumping station, thickener & filter press	800A MCCB	-----	2KVA-1no 415/110 AC	03 nos motor control feeders with VFD for Process water pumps, 03 nos of feeders for motorized gate valves, 01 feeder for EOT crane, 01 feeder for vertical pump (sump) for draining water spillage, 01 no of FASD for spare and 2 nos of 400ASDF – Rating as per bidder's design	2nos 400A	-----
---	--	-----------	-------	------------------------	---	-----------	-------

iii. Components of Panels

<u>DESCRIPTION</u>	<u>INCOMERS</u>	<u>BUS COUPLER</u>	<u>MOTOR OUT GOING FEEDER</u>	<u>POWER OUTLET</u>	<u>CONTROL TRANSFORMER FEEDER</u>
MCC-6H of Slime Removal system	MCCB, external handle for operation, Internal Wiring, On ,Off, Trip Status, RYB Indication of Incoming Power, Voltmeter Digital With Three Phase Selector Switch, Ammeter Three Phase With Selector, Digital Analyzer, Emergency Off Push Button, MCB, Contact Points ,Terminal Blocks	-----	MCCB with extended handle, Contactor, SPP, OLR, Aux Contactor as per the Enclosed Control Ckt, Control MCB, Internal Wiring, On, Off & Trip Indication, Selector Switch, Digital Ammeter for Three Phase	MCCB with extended handle, Internal Wiring, On, Off & Trip Indication	MCCB with extended handle, Internal Wiring, On, Off & Trip Indication, Digital Ammeter for Three Phase
MCC-7H of Pumping station, thickener & filter press	MCCB, external handle for operation, Internal Wiring, On ,Off, Trip Status, RYB Indication of Incoming Power, Voltmeter Digital With Three Phase Selector Switch, Ammeter Three Phase With Selector, Digital Analyzer, Emergency Off Push Button MCB, Contact Points ,Terminal Blocks	-----	MCCB with extended handle, Contactor, Spp, OLR, Aux Contactor As per the Enclosed Control Ckt, Control MCB, Internal Wiring, On, Off & Trip Indication, Selector Switch, Digital Ammeter for Three Phase	MCCB with extended handle, Internal Wiring, On, Off & Trip Indication	MCCB with extended handle, Internal Wiring, On, Off & Trip Indication, Digital Ammeter for Three Phase

- iv. This specification covers Design, fabrication, supply and installation of Motor Control Centre(MCC).
- v. The supply should be complete in all respect and any equipment or accessories not covered in this specification but essential for proper design, operation and maintenance of MCC covered under this specification shall be included.

- vi. Where found necessary, IREL reserves the right of selecting the manufacturer of Electrical equipment, instrument and controls or any other specified items in the interest of standardization and you shall supply equipment of particular make, if so required.
- vii. STANDARD
 - a) All equipment shall be designed, assembled and tested in accordance with latest standards of Indian standards institution wherever available, in cases where suitable Indian standards are not available, generally acceptable codes and practices shall be adopted.
 - b) The MCC should confirm to the latest Central Electricity Authority Regulations 2023 as regards safety, earthings and other essential provisions specified therein for the installation and operation of electrical plants.
 - c) All exposed surfaces shall be painted as per details provided in technical specification.
 - d) All equipment shall comply with the statutory requirements of the Government of India and State Government of Tamil Nadu. The equipment and installation shall also confirm to the provisions of statutory and other regulations in force such as the Indian Factories Act, Indian Mines Act etc. Approval of drawing and or installation by the statutory authorities should be arranged and any changes required by the same authorities shall be made by you at no extra cost.
- viii. Construction & Other General Requirements of the various Switchboards/Panels
 - a) Motor Control Centre (MCC)
 - (i) The panels shall be freestanding, modular, multitier construction made out of minimum 2 mm CRCA sheet, and shall be in 02(two) parts.
 - (ii) The switchboard shall be in cubicle design (each feeder components are housed in individual cubicle) and fully compartmentalized having total segregation between each feeder, Bus bar & Cable Chambers. The incomer and outgoing cable entry (outgoing cables) shall be from the bottom. The design shall permit for extension of switchboard at both the side. NOTE: Motor Control Centre should be Front and back Loading
 - (iii) Structures including doors and panels shall be capable of withstanding the internal pressure created by faults within the structure (equal to the maximum fault-current rating for a specified duration) without to the operating personnel. The minimum standard required is detailed in IS 3427. Doors shall be provide with stiffeners to avoid buckling/bending during operation.

- (iv) Structures shall be provided with barriers to prevent the transfer of ionized gases between compartments except busbar chambers.
- (v) Outgoing feeder units shall be arranged in tier formation. Incomer and bus bar coupler shall be located in non-tiered separate cubicle.
- (vi) Direct access or accidental contact with the busbar and primary connections shall not be possible. All aperture and slots shall be protected by baffles to prevent accidental shorting of busbars by the entry of maintenance tools. To provide a tight seal between cubicle and insulating panels shall be provide for busbars crossing from one cubicle to another.
- (vii) Extra protection covers (See thro' acrylic cover) removable providing access to live power equipment /circuit shall be provided with tool operated fasteners to prevent unauthorized access.
- (viii) One metal sheet shall be provided between two vertical sections running to the full height of the switch gear except for the horizontal busbar compartment. However each shipping section have metal sheet at both ends.
- (ix) Adequately designed supporting structure shall be provided for the complete enclosure system, to attain the structural rigidity of the board. Front panels shall be made rigid, with stiffeners as necessary. Board shall be extendable at both ends.
- (x) It shall be provided with hinged doors on the front with necessary handles and earthed using flexible copper conductor. The doors shall be provided with neoprene gaskets. Suitable channel base frame should be provided for the panel board.
- (xi) Detachable gland plates of 3mm thick shall be provided at the bottom of the panel for cable entry, suitable for the termination of cables with compression type glands to the sizes as specified. Adequate space should be provided in the cable chamber for safe bending and termination of cables.
- (xii) The enclosure shall be provided with lifting hooks, supporting legs and double earth terminals with double washers.

- (xiii) The switchboard shall be in cubicle design (each feeder components are housed in individual cubicle) and fully compartmentalized having total segregation between each cubicle. Suitable cable and bus bar alleys as well as separate metering and relaying compartments shall be provided. All components of the switchboard shall be approachable from front. The Bus bar chamber cover should be bolted type. The maximum operating handle/push button height of any feeder should not be more than 1800 mm with reference to panel bottom. Supporting arrangement for dressing of power and control cables in cable alleys also shall be provided. The front operable/lockable door shall act as a cover for the switchboards. The bus bar should be extendable at both ends. No bus bar should be protruded in the cable alley. The cable chamber have suitable size for terminating required number of cables without difficulty. Suitable control transformer (110V AC) shall be provided with in the panel for energising the control and protection circuits.
- (xiv) Corrosion Protection & Powder coating
- (xv) All metal sheets shall undergo 7 tank metal treatment, thorough de rusting-rinsing-degreasing-rinsing- phosphating-rinsing and then Passivation. All metal surfaces shall be thoroughly cleaned and degreased to remove all scales, rust, grease and dirt. Fabricated structures shall be pickled and treated to remove any trace of acid. The under surface shall be made free from all imperfections before undertaking powder coating.
- (xvi) Supplier shall obtain details of approved colour from the Engineer-in-charge before powder coating.
- (xvii) Panel finish shall be free from imperfections like pin holes, run-off paint, etc.
- (xviii) All unpainted steel parts shall be cadmium plated or suitably treated to prevent rust, corrosion, etc

b) Bus bar sizing, connection and supports:

- (i) The bus bars shall be made from high conductivity aluminium. The bus bars and supports shall be capable of withstanding the rated and short circuit current Minimum size of main power bus bars shall be of incomer switch rating and interconnecting bus bar to feeders should be rated to switch rating. The current carrying capacity of aluminium bus bar should be considered as per standard.

- (ii) The bus bars shall be provided with heat shrinkable PVC insulating sleeve. Supports for bus bars shall be made of suitable size cast resin ribbed insulators and these should be adequate in number so as to avoid any sag in the bus bars. (Hylam supports should not be used)
 - (iii) Minimum clearance between phase to phase shall be 32mm and that between phase to neutral/earth shall be 26 mm for 415V panel.
 - (iv) The bus bar sizing details and design shall be submitted to the engineer in charge for verification.
- c) Power Connection:
- (i) For power interconnections within the panel board
 - (ii) Rigid Copper conductor, with PVC insulation, of adequate cross section i.e., current carrying capacity not less than the outgoing switch rating shall be used. To prevent accidental contacts, all exposed live portions of interconnecting bus bars and all terminals also shall be shrouded. Provision for clamping the cables inside the cable alley should be provided. Standard colour code of red, yellow and blue for phases and black for Neutral to be followed for all bus bars/conductors.
 - (iii) Wiring for all controls, protection, metering, signalling, etc. inside the switchboard shall be done with 650 volts grey colour HFFR (Halogen free fire retardant) copper conductor cables. Minimum size of these conductors shall be 2.5 Sq.mm. Control wiring to components fixed on doors shall be flexible type.
 - (iv) The complete panel would be sub-divided into different sections and each section shall have its own control circuit with MCB and indication. All control wiring should be provided with necessary cable sockets/ lugs at both ends. Conductors shall be terminated using compression type lugs. Each termination shall be identified at both the ends by PVC ferrules. The identification termination numbers should match with those on the drawings.
- d) Components of switch boards
- (i) The panel shall be provided with MCCB's, fuses, meters, relays and instruments, MCCB, contactors, over load relays, SPP, Auxilliary contactor, internal wiring etc.. The switchgears should be positioned inside the panel board as per manufacturer's standards.
- e) Moulded Case Circuit Breakers.

- (i) Moulded case circuit breakers (MCCBs) shall be incorporated wherever required and shall be of extra current limiting type and preferably double break. MCCBs shall conform to IS 13947-1/IEC 60947-1 for general rules and IS 13947-2/IEC 60947-2 for circuit breakers in all respects. MCCB shall be suitable for isolation as per standard, single phase 240V or three phase 415 V, 50Hz, AC supply.

f) Construction:

- (i) The MCCB case & cover shall be made of high strength heat resistant and flame retardant thermosetting insulating material.
- (ii) The operating handle shall be quick make, quick break trip free type. The operating handle shall have suitable 'ON','OFF','TRIPPED' indicators.
- (iii) In order to ensure suitability for isolation complying with IS13947-2/IEC 60947-2, the operating mechanism shall be designed such that the toggle or handle can only be in 'OFF' position.
- (iv) Three phase MCCBs shall have a common operating handle for simultaneous operation and tripping of all the three phases.

g) Rating & Breaking Capacity:

- (i) The rating of the circuit breaker shall be as per the drawings and schedule of quantities.
- (ii) The MCCB shall have Service Breaking Capacity (Ics) equal to Ultimate Breaking capacity (Icu). The contractor shall be provided the MCCB with same kA rating or nearest higher rating as mentioned in the Schedule of quantities.

h) Protection:

- (i) All outgoing Moulded Case Circuit breakers of 160A and above shall have microprocessor based trip unit with adjustable overload protection from 40% to 100% of the nominal current (I_n). The short circuit protection should be adjustable from 2 to 10 times the rated current (I_r). MCCB's below 160A Rating shall be of thermal magnetic type with adjustable overload protection.
- (ii) 630A MCCBs shall have fault indication of (O/C, S/C and E/F).
- (iii) The MCCBs shall be possible to fully co-ordinate the over-load & short-circuit tripping of the circuit breakers with the upstream and downstream circuit breakers to provide Total Discrimination.
- (iv) MCCB should have the flexibility of connecting the load either on the top or on the bottom side without deration.

i) Accessories:

- (i) MCCBs shall be provided with the following accessories and all these devices shall be fixable at site. The accessories shall be separated from Power circuit. Preferably the Shunt trip release and under voltage release shall be snap-in type and fitted with terminal blocks. Shunt trip Auxiliary switch. Extended rotary Handle.
- j) Digital panel meters
 - (i) Digital panel meters with provision to read and meter various parameters such as R-Y-B voltages and currents, kW, kWh, power factor and frequency shall be provided for the Panels
- k) Motor control switch gear components:
 - (i) Each of the motor control outgoing feeder shall have required MCCB, contactor, OLR, SPP, auxiliary contactor, MCB, internal wiring, etc as per type -2 co-ordination requirement and minimum size mentioned in the table. The rating of the OLR may be changed based on the requirement at the time of finalization of load or motors.
- l) Measuring instruments
 - (i) These shall be of square pattern having dimensions of 96x96 mm flush mounting type. Instruments like ammeter, Voltmeter, frequency meter etc. and instrumental transformers/ transducers etc. are also included in the scope of supply.
 - (ii) All AC meters shall be of class 1 accuracy.
 - (iii) Voltmeter shall be suitable for direct line connection. Voltmeters shall be connected through MCB's only.
 - (iv) All voltmeters shall be provided with selector switches.
 - (v) Ammeters shall be CT operated and with selector switch as specified in the Drawing.
- m) Indicating Lamps
 - (i) Panel mounting indicating lamp shall be wide band LED type with minimum 22mm diameter and its operating voltage shall be 240V ac. The colour of the lamp as per standards. Breaker On/OFF and tripped indication lamps (LED Type) and R,Y,B indication lamps shall be provided for each feeder (Incoming & outgoing feeders).
- n) Earthing
 - (i) Two independent earthing points shall be provided outside the panel near bottom and these shall be inter-connected with suitable earthing bus bars. The size of Earthing Strips shall be according to the earth fault current /KA ratings and meeting the Electrical Inspectorate rules and regulations.
- o) Name plates

- (i) Switch board shall be provided with danger plate and nameplates for all incoming and outgoing feeders. These nameplates shall be of PVC (black colour base & white letters engraved) screwed to panel. PVC identification ferrule numbers shall be used for all internal wiring. The nameplate shall contain the following information.
- (ii) Panel Board Identification name & number
- (iii) Feeder name.
- (iv) Switch/ fuse rating.
- (v) Switchboard Normal Current/Voltage rating
- (vi) Short Circuit KA rating

p) Supports

- (i) Bus bars shall be rigidly fixed to the supports, of SMC/DMC solid block type base. Busbars shall be firmly held within the slots in sheet type supports, which in turn shall be rigidly fixed to the chamber.

q) Tests

- (i) All routine tests as per relevant codes and standards shall be conducted on the switchboards/components. Test reports and test certificates shall be submitted for the same. Purchaser/Purchaser's representatives shall have the right to inspect the progress of work, quality of materials used/ workmanship and to witness the Routine tests after completion of work at the premises of the manufacturer. The manufacturer shall give at least 15 days advance information to client about the manufacturing and Routine tests plan so that Purchaser can attend the same.
 - (a) Routine tests may comprise:
 - (b) Functional tests
 - (c) Mechanical operating of circuit breaker
 - (d) Calibration of releases of circuit breaker
 - (e) Dielectric withstand of circuit breaker

r) Requirements for Drawings/Documents & Approvals

- (i) The drawing showing general arrangements and detailed wiring diagram for the Panels shall be submitted to the Engineer-in-charge for approval, prior to manufacture and the same shall be got inspected, prior to despatch to project site. The complete switchboard and its component shall conform to Indian Electricity Rules, Relevant IS and meeting the regulations of Tamil Nadu State Electrical Inspectorate.
- (ii) The following minimum drawings and documents shall be submitted:

S.I.No	Description	For Review	Final A built
1	General Arrangement with dimension details, bus bar sizes, construction details etc	Required	Required.
2	Single line schematic	Required	Required
3	Detailed Control schematic, metering & Protection details	Required	Required
4	Test reports/ Test certificates	Required	Required
5	Catalogues/manuals of panels & components	Required	Required
6	Relay setting calculation and setting details	Required	Required.
7	Internal wiring details of brought out items	Required	Required
8	Interlock and inter panel wiring	Required	Required
9	Make, type and fixing details of components	Required	Required
10	Terminal wiring diagram	Required	Required

3.1.5 CABLE TRAYS

- a) Ladder type FRP cable trays & supports shall be provided to withstand the highly corrosive atmosphere prevailing at site. The rate for cable trays shall include rate for cable trays, all required accessories, supports etc. complete.
- b) FRP Ladder type Cable tray with FRP coupler plates and SS 304 fasteners, Size: 300mm x 75mm x 4mm thick, side rail: FRP channel 75mm x (25/30)mm x (3/4)mm thick, rung spacing: 300mm, MOC: Resin (Polyester-Isophthalic or Vinyl ester), FR & UV stabilized, length: 3000mm, colour: Grey/Yellow
- c) Plug And Socket Assembly
 - (i) Metal enclosed 32A three phase with neutral plug & socket: Complete with plug, socket ,3P MCB 32A complete with all internal wiring. The enclosure shall be metal sheet steel with provision of earthing. Enclosure shall be IP54, Make: L&T, Siemens, Legrand, Schneider
 - (ii) Metal enclosed 63A three phase with neutral plug & socket: Complete with plug, socket ,3P MCB 63A complete with all internal wiring. The enclosure shall be metal sheet steel with provision of earthing. Enclosure shall be IP54, Make: L&T, Siemens, Legrand, Schneider
- ii. Metal enclosed 100A three phase with neutral power outlets

- a) complete with ISOLATOR 3P MCB 100 A complete with all internal wiring. The enclosure shall be metal sheet steel with provision of earthing. Enclosure shall be IP54 with top and button gland fixing plates
- b) Make: L&T, Siemens, Legrand Schneider

3.1.6 Push Button Stations

- i. On push button (two Nos: NO contacts wired to terminal box) with Green button and Off push button (Lockable in off position) and having two NC contacts wired to terminal box with Red colour shall be provided. The material of construction of push button enclosure shall be cast Aluminium alloy (LM6)/cast iron/thermo-setting plastic. Degree of protection shall be IP 65 weather proof. The push button station shall be suitable for wall mounting or plate mounting or pedestal.
- ii. Push button enclosure shall be earthed and terminated to earthing terminal in duplicate. Provision to indicate motor / Equipment tag number on the push button station. Cable gland entry openings shall be provided in duplicate suitable for 9C 2.5 Sq.mm. Cable. Blanking plugs shall be provided as part of push button station. All screws provided for fixing shall be of SS electro galvanised or cadmium plated. Two numbers of integral earthing stud shall be provided for each push buttons.
- iii. Insulation mat
 - a) 11kv confirming to IS: 15652/2006 with its latest amendments. Application: to be used in front of electrical panels. Made out of dielectric elastomer having elastic property either from natural or synthetic material.
 - b) SIZE : 3000MM X 1000MM X 3MM thick, Abrasive surface, Black/red in colour, I water , moisture and fire retardant marked
 - c) Fire extinguishers
 - d) Supply and fixing of carbon-dioxide extinguisher of ISI marked 4.5 Kg capacity made of high pressure seamless steel cylinder (CCE marked) complete with wheel type valve with one meter long braided high pressure discharge hose complete in all respects including initial fill with CO2 gas.

3.1.7 Specification Of Miscellaneous Items

- i. Aluminium and copper crimping sockets (MAKE: DOWELS, JAINSON)
 - a) Suitable size cable crimping sockets to be used for termination of Aluminum/copper cables using cable socketing/crimping machine. Cable Connectors
 - b) Cable connectors, lugs/sockets, shall be of copper/Aluminium alloy, suitably tinned, soldering less, crimping type. These shall be suitable for the cable being connected and type of function (such as power, control or connection to instruments, etc.)

- ii. Cable Glands:
 - a) Single compression heavy duty brass cable gland with nickel plating finish complete with all accessories of sizes specified in the bill of quantity
 - b) Double compression heavy duty brass cable gland with nickel plating finish complete with all accessories sizes specified in the bill of quantity
 - c) Glands must be of reputed make and ISI marked.
 - d) Gland make to be specified in the offer and if required by EIC samples to be provided for final acceptance. Cable glands shall be of heavy duty, made of brass, Chrome plated. These shall have a screwed nipple with conduit electrical thread and check nut. These shall be suitable for armoured/unarmoured cables as per requirement.
- iii. Cable Connectors
 - a) Cable connectors, lugs/sockets, shall be of copper/aluminium alloy, suitably tinned, soldering less, crimping type. These shall be suitable for the cable being connected and type of function (such as power, control or connection to instruments, etc.)
- iv. Cable Indicators
 - a) These shall be self-sticking type and of 2 mm thick aluminium/copper strap for overall cable. PVC identification numbers, ferrule shall be used for each wire.
- v. GI flat
 - a) GI flat galvanization shall be carried out by Hot dip galvanization process Galvanization thickness 86micron minimum or 610gms/sqm minimum
 - b) Test certificate towards galvanization thickness from government recognized test
 - c) laboratory to be provided. Size of the GI flats to be supplied as follows: 100mm X 10mm, 50mm X 60mm, 25mm x 4mm
- vi. Thermo plastic junction boxes: IP65,
 - a) size: 98 X 98 X 61 MM
 - b) with metric knockout for cable entry 5pole terminals up to 4sqmm
 - c) with 3nos of Brass single compression glands
 - d) Make : Hensel, Rittal, L &T, or equivalent
- vii. HT Cable jointing kit size:
 - a) End termination joint, indoor door use suitable for 11kv(E) 3Core 185 SQMM GI Strip armoured cable inside panel Test and Guarantee certificate for 18months of use to be provided.

- b) Make of material: Raychem, 3M, Multi-pressing/Multishrink
- viii. PVC Conduits.
 - a) All rigid conduit pipes shall be of PVC and be ISI marked. The wall thickness shall be not less than 1.6 mm for conduit up to 32 mm dia and not less than 2 mm for conduits above 32 mm dia
- ix. GI Conduits
 - a) All rigid conduit pipes shall be of GI and be ISI marked. The wall thickness shall be not less than 1.6 mm for conduit up to 32 mm dia and not less than 2 mm for conduits above 32 mm dia
- x. Supply of danger boards:
 - a) 11kv of size 225mm x 300mm(height x width) x 2mm thick MS/AL plate. Red and white painted with skull - Danger mark in white. Voltage and danger written on Tamil, English and Hindi. (10NOS)
 - b) Supply of danger boards: 440v of size 225mm x 300mm (height x width) x 2mm thick MS/AL plate. Red and white painted with skull - Danger mark in white. Voltage and danger written on Tamil, English and Hindi. (10NOS)

3.1.8 Installation And Commissioning Of Equipments

- i. Scope of party includes, installation, supervision of the installation of the items at the designated positions, energization, getting permission for energization from Competent Authority and commissioning of the complete system.
- ii. The electrical equipments i.e. LT panel, lighting Distribution boards, MCC, control desk, change over switch , miscellaneous items, cabling etc are to be placed at the appropriate position.
- iii. After positioning of the equipments all the connections of cables, earthing, glanding, socketing, end termination etc required for the satisfactory operation of the equipments to be carried out by the bidder
- iv. After completion of the connections the testing of the equipments before energization of the equipment shall have to be carried out by the Agency.
- v. The various tools, calibrated testing equipments, etc required for testing of the equipments are in the scope of the Agency.
- vi. LT Panels, bus duct, lighting distribution board & capacitor bank APFC panels installation and commissioning
 - a) The electrical panels shall be installed at the desired location confirming to IS standard applicable for low voltage and medium voltage switchgear panels with its latest amendments
 - b) Switchgear panels alignment and leveling to be checked on their base channels as per the instructions of the Engineer-in-charge.

- c) The earth bus shall be made continuous throughout the length.
- d) Loosely supplied relays and instruments shall be mounted and connected on the switchgear. Wherever the instruments and relays are supplied separately, they shall be mounted only after the associated control panel have been erected and aligned.
- e) After erection the switchboard shall be inspected for dust and vermin proofness. Any hole, which might allow dust or vermin etc. to enter the panel, shall be plugged suitably at no extra cost.
- f) The Contractor shall fix the cable glands after drilling the bottom top plates of all switchboards with suitable holes at no extra cost. All the required cables and wires are to be suitably terminated using glands and sockets.
- g) Testing
 - (i) The Contractor shall perform operating tests on all switchgear and panels to verify operation of switchgear/panels and correctness of the interconnections between various items of the equipment. This shall be done by applying normal ac or dc voltage to the circuits and operating the equipment for functional checking of all control circuits, e.g. closing, tripping, control interlock, supervision and alarm circuits. All connections in the switchgear shall be tested from point to point for possible grounds or short circuit.
 - (ii) All electrical equipment alarms shall be tested for proper operation by causing alarms to sound under simulated abnormal conditions as applicable
 - (iii) The Contractor shall arrange testing and calibrations of relays. The testing equipment including primary and secondary injection sets (if required) etc. shall also have to be arranged by the Contractor. Payment for above work shall be deemed to have been included in the erection of switch boards/control panels.
 - (iv) Insulation resistance tests shall be carried out by following rating meggers:
 - (f) Control circuits up to 220V : by 500 Vmegger
 - (g) Power circuits, bus bars, connections Up to 1.1kV : by 1000Vmegger
 - (v) Before electrical panel is energised, the insulation resistance of each bus shall be measured from phase to ground. Measurement shall be repeated with circuit breakers in operating positions and contact open. Before switchgear is energised, the insulation resistance of all DC control circuits shall be measured from line to ground.
 - (vi) The following tests shall be performed on all circuit breakers during erection:

- (a) Contact alignment and wipe shall be checked and adjusted where necessary in accordance with the breakers manufacture's instructions.
 - (b) Each circuit breaker shall be closed manually and its insulation resistance measured from phase to phase and phase to ground before erection.
 - (c) All adjustable direct acting trip devices shall be set using values given by the Engineer-in-charge/manufacturer.
 - (d) Before switchgear is energised the following tests shall be performed on each circuit breaker in its test position.
 - (e) Close and trip the circuit breaker from its local & remote control switch, push button or operating handle. Switchgear control bus may be energised to permit test operation of circuit breaker with AC closing with prior permission of the Engineer-in-charge.
 - (f) Trip breaker either manually or by applying current or voltage to each of its associated protective relays.
 - (g) Before switchgear is energised, the test covered above shall be repeated with each breaker in its normal operating position.
 - (h) All electrical equipment alarms shall be tested for proper operation by causing alarms to sound under simulated abnormal conditions.
 - (i) After supply and installation of complete project or a particular building/area, the contractor shall carry out following tests before switching on the power to installation and the results shall be recorded and submitted to the engineer-in-charge. If results are not satisfactory/as per the standard, the contractor shall identify the defects/short coming and shall rectify the same. Nothing extra shall be paid for carrying out these tests and contractor has to arrange all necessary instruments.
- h) Insulation resistance to earth
- (i) This to be measured with all fuse links in place all switches on all lamps and appliance in position by applying a voltage not less than twice the working voltage (subject to a limit of 500V). Insulation resistance of the whole or any part of the installation to earth must not be less than 50 Mega ohms divided by the number of outlets (points and switch positions) except that it need not exceed 1 Mega ohm for the whole installation.
- i) Insulation resistance between conductors

- (i) Test to be made between all the conductors connected to one pole or phase conductor of the supply and all the conductors connected to the middle wire or neutral or the other pole or phase conductors of the supply. For this test, all lamps shall be removed and all switches put on. The result of the test must be 50 Mega ohms divided by the number of outlets (point and switch positions) but need not exceed one Mega ohm for the whole installation.
- j) Polarity of single pole switches
 - (i) Test shall be made to verify that all non-linked single pole switches are on phase conductor (Live) and not on the neutral or earthed conductor.
 - (ii) Joint inspection and testing report to be produced by the contractor.
- k) Cabling
 - (i) Cable network shall include power, control and lighting cables, which shall be laid in underground trenches, Hume pipes, open trenches, cable trays, GI pipes, or on building structure surfaces as detailed in the relevant drawings, specifications and Cable schedules or as per the Engineer-in-charge's instructions. Supply and installation of cable trays, GI pipes/conduits, cable glands sockets at both ends, isolators, junction boxes, remote push buttons stations, etc. shall be under the scope of the Contractor.
 - (ii) General requirements for handling of cables
 - (a) Before laying cables, these shall be tested for physical damage, continuity absence of cross phasing, insulation resistance to earth and between conductors. Insulation resistance tests shall be carried out with 500/1000 volt Megger.
 - (b) The cables shall be supplied at site, wound on wooden drum as far as possible. For smaller length and sizes, cables in properly coiled form can be accepted. The cables shall laid by mounting the drum of the cable on drum carriage. Where the carriage is not available, the drum shall be mounted on a properly supported axle, and the cable laid out from the top of the drum. In no case the cable will be rolled on, as it produces kinks, which may damage the conductor.
 - (c) Sharp bending and kinking of cables shall be avoided. The bending radius for insulated and sheath armoured cable shall not be less than 10 D Where 'D' is overall diameter of the cable.

- (d) While drawing cables through GI pipes, conduits, RCC pipe, ensure that size of pipe is such that, after drawing cables, 40 % area is free. After drawing cable, the end of pipe shall be sealed with cotton/bituminous compound.
- (e) Armoured cables shall never be concealed in walls/floors / roads without GI pipes, conduits RCC pipes.
- (f) Joints in the cable throughout its length of laying shall be avoided as far as possible and if unavoidable, prior approval of site engineer shall be taken. If allowed, proper straight through epoxy resin type joint shall be made, without any additional cost.
- (g) Cable shall be neatly arranged in the trenches/trays in such a manner so that criss-crossing is avoided and final take off to the motor/switchgear is facilitated. Arrangement of cables within the trenches/trays shall be the responsibility of the Contractor.
- (h) All cable routes shall be carefully measured and cable cut to the required lengths and undue wastage of cables to be avoided. The routes indicated in the drawings are indicative only and the same may be rechecked with the Engineer-in-charge before cutting of cables. While selecting cable routes, interference with structures, foundations, pipeline, future expansion of buildings, etc. should be avoided.
- (i) All temporary ends of cables must be protected against dirt and moisture to prevent damage to the insulation. For this purpose, ends of all PVC insulated cables shall be taped with an approved PVC or rubber insulating tape. Use of friction type or other fabric type tape is not permitted. Lead sheathed cables shall be plumbed with lead alloy.
- (j) Wherever cable rises from underground/concrete trenches to motors/switchgears/push buttons, these shall be taken in GI pipes of suitable size, for mechanical protection up to 300 mm distance of concerned cable gland or as instructed by the Engineer-in-charge.
- (k) Where cables pass through foundation/walls of other underground structures, the necessary ducts or openings will be provided in advance for the same.
- (l) However, should it become necessary to cut holes in existing foundations or structures the electrical Contractor shall determine their location and obtain approval of the Engineer-in-charge before cutting is done.

(iii) Installation of Cables

- (a) Utmost care shall be taken to avoid scratches, kinks and cuts on the conductor while transporting the cables to site or during installation. Suitable inhibiting grease shall be liberally applied to bare conductors, wherever they exist.
- (b) The junction boxes, cable end boxes etc. wherever required to be provided shall have sufficient wiring spaces with regard to the sizes of cables indicated in the drawings. Wherever required, the items to be supplied for electrification shall be complete with requisite type of cable glands, cable boxes, termination etc. and other accessories which are necessary for the satisfactory installation/operation of the installations as per relevant statutory rules and regulations.
- (c) Installation of all cables should be as per E.I. Standards. Fuses should be graded properly and should be selected based on the rating of cables. The cables shall be laid in trenches/overhead racks wherever available. The cables from cable trenches to the switcher shall be buried (as per standard practices and or taken through GI pipes to 1.2 m above ground/racks floor level. The cables taken over racks/ walls/ columns/ trusses shall be properly clamped using suitable clamps of 16 SWG 1/4 hard or 3/4 hard sheet, the width varying from 12.5 to 25 mm at intervals of 750 mm. 225 mm minimum horizontal inter axial spacing shall be maintained when more than one cable is laid in same trench. Suitable and permanent type of cable markers is to be provided indicating the route and position of joints of cable. Loops should be provided at either ends of the cable. Identification tags should be provided for each cable in the trench at a distance of 3metres.
- (d) Supply and installation of danger notice boards, where required, and other provisions under the statutory rules and regulations shall be included in the scope of this work.
- (e) The Contractor has to provide materials and carry out the wiring work including earthing according to IS 3043 unless otherwise specified and get it approved before using for work, by the authorised engineer of the Purchaser.

- (f) Sufficient number of earth pits shall be provided, if found necessary and inter- connected so as to have the resistance of the earthing installations not more than 1 ohm. In case the soil resistivity is found to be very high, a high sensitive relay may be used to co-relate the relay setting with high earth resistance.
 - (g) The complete installation work shall be conforming to complying with the Indian Electricity Rules and to meet the approval of the State Electrical Inspector etc. Installation of all switchboards and distribution boards should be in conformity with Rule 51(1)(c) of I.E.R.1956.
 - (h) The cable terminations and earth terminations, wherever required, shall only be using compression type cable glands and suitable lugs.
 - (i) All the materials to be supplied for this work shall be got approved by the concerned engineer at site.
 - (j) The work will be considered complete only if the following tests are conducted, by the contractor at his own cost, satisfactorily in the presence of the site Engineer and are:
 - (k) Insulation test, Earth resistance test and Continuity test
- (iv) Laying of Cables (underground system)
- (a) Cables shall be so laid in ground that these will not interfere with other underground structures. All water pipes, sewage lines or other structures, which become exposed by excavation, shall be properly supported and protection from injury until the filling has been rammed solidly in places under and around them. Any telephone or other cables coming in the way are to be properly shielded diverted as directed by the Purchaser.
 - (b) Cables shall be laid at minimum depth of 750 mm in case of LT & 1200 mm in case of HT, from ground level. Excavation will be generally in ordinary alluvial soil. The width of the trench shall be sufficient for laying of required number of cables.

- (c) Sand bedding 75 mm thick shall be made below and above the cables. A layer of bricks (full size) shall be laid on the edge, above sand bedding on the sides of cables and a flat brick to cover cable completely. More than one cable can be laid in the same trench by providing a brick on edge between two cables. However the relating location of cables in trench shall be maintained till termination. The surface of the ground after back filling the earth shall be made good so as to conform in all respects to the surrounded ground and to the entire satisfaction to the Engineer-in-charge.
- (d) For all underground cables, route markers should be used.
- (e) Separate cable route markers should be used for LT, HT and telephone cables.
- (f) Route markers should be grounded in ground with 1:2:4 cement concrete pedestal size 230 x 230 x 300 mm.
- (g) Cable markers should be installed at an interval not exceeding 50 M along the straight routes of cables at a distance of 0.5 M away from centre of cable with the arrow marked on the cable markers plate indicating the location of cable. Cable markers should also be used to identify change in direction of cable route and for location of every joint in underground cable.
- (h) RCC Hume pipes for crossing road in cable laying shall be provided by Contractor as per BOQ.
- (i) RCC Hume pipe at the ends shall be sealed by bituminous compound after laying and testing of cable by electrical Contractor without any extra charge.
- (v) Laying of Cables in Cable Racks
 - (a) Cable Racks to be used for cables laid indoors except for single cables. The cable racks shall be of ladder type and as specified in technical specification and schedule of items. The cable racks shall be of adequate strength to carry the weight of cables without sagging. Cable tray supports shall be at intervals of not less than 2.5m.
 - (b) Cables shall be fixed in cable trays in single tier formation and shall be clamped with aluminium flat clamps and galvanised bolts/unit.
 - (c) Earthing flat/wire can also be laid in cable tray along with cables.
 - (d) After laying of cables minimum 20 % area shall be spare.

- (e) The entire cable entry opening in the wall/ceiling of the buildings shall be properly sealed with cable entry blocks.
- (vi) Termination and Jointing of Cables
 - (a) Use of Glands
 - (b) All PVC cable up to 1.1 kV grade, armoured or un armoured shall be terminated at the equipment/junction box/ isolators/push buttons/control accessories, etc. by means of suitable size compression type cable glands armour of cable shall be connected to earth point. The Contractor shall drill holes for fixing glands wherever necessary. Wherever threaded cable gland is to be screwed into threaded opening of different size, suitable galvanised threaded reducing bushing shall be used for approved type.
 - (c) In case of termination of cables at the bottom of the panel over a cable trench having no access from the bottom, a close fit holes should be drilled in the bottom plate for all the cables in one line, then bottom plate should be split in two parts along the centre line of holes. After installation of bottom plate and cables with glands, it shall be sealed with cold sealing compound.
 - (d) Use of Lugs/Sockets
 - (e) All cable leads shall be terminated at the equipment terminals, by means of crimped type solder less connectors unless the terminals at the equipment ends are suitable for direct jointing without lugs/sockets.
 - (f) The following is the recommended procedure for crimped joints and the same shall be followed:
 - I. Strip off the insulation of the cable end with every precaution, not to severe or damage any stand. All insulation to be removed from the stripped portion of the conductor and ends of the insulation should be clean and square.
 - II. The cable should be kept clean as far as possible before assembling it with the terminal/socket. For preventing the ingress of moisture and possibility of re-oxidation after crimping of the aluminium conductors, the socket should be fitted with corrosion inhibiting compound. This compound should also be applied over the stripped portion of the conductor and the palm surface of socket.

- III. Correct size and type of socket/ferrule/lug should be selected depending on size of conductor and type of connection to be made.
- IV. Make the crimped joint by suitable crimping tool.
- V. If after crimping the conductor in socket/lug, same portion of the conductor remains without insulation the same should be covered sufficiently with PVC tape.
- (g) Dressing of Cable inside the Equipment
- (h) Laying of Cables on Building Surface/Structure
- (i) Laying of Cables under Floors
- (j) Laying of Cable in Masonry Trenches
- (k) All the cable laying shall be as per IS 1255 with its latest amendments in case not specifically mentioned
- (vii) Cable Indicators
 - (a) These shall be self-sticking type and of 2 mm thick aluminium/copper strap for overall cable. PVC identification numbers, ferrule shall be used for each wire

3.1.9 Earthing and Lightning Protection Systems.

- i. Scope of this specification covers the requirements for the Earthing and Lighting systems.
 - a) Contractor's scope shall include earthing system of the entire electrical installation & lightning protection. The earthing & Lightning Protection system shall be as per relevant IS codes and as per statutory rules and regulations. Apart from the equipment protective earthing system covering the earth electrodes, interconnection networks, neutral and body earthing of transformers, switchgear body earthing , motors etc, the complete noncurrent carrying metal parts & structures, cable trays etc. in the plant shall be earthed in duplicate using suitably sized earth strips meeting the IS codes and relevant standards.
 - b) Earthing, Electrodes, Interconnections and Equipment Earthing.
 - c) The earthing system followed shall be as per earthing layout diagram, schedule of requirements and conforming to IS 3043.
 - d) The philosophy of Earth pits and interconnections shall be as below:
 - (i) Plate Earth electrodes/pipe electrodes shall be used for earthing of Transformers and LT Panels.
 - (ii) Lightning Protection shall be done by using GI Pipe earth electrode.

- (iii) Earthing System in each plant shall be formed as ring interconnecting earth electrodes and this earthing system shall be connected to IREL's existing earthing system in duplicate. Actual point of interconnection to be identified during execution.
- e) The following points may be noted while executing the earthing work:
 - (i) Pipe electrode shall be buried in the ground vertically with its top not less than 20cm below the ground level. The installation shall be carried out as directed by the engineer in charge.
 - (ii) Plate electrode shall be buried in ground with its face vertical, and its top not less than 2m below the ground level. The installation shall be carried out as directed by the engineer in charge.
 - (iii) When more than one electrode is to be installed the distance between the pipe electrodes shall be 5m and that between plates shall be 8m.
- ii. **Earthing Conductor:** The earthing conductor (protective conductor from earth electrode up to the main earthing terminal/earth bus, as the case may be) shall be of the same material as the electrode, viz. GI, and in the form of wire or strip as specified. Protective (Earth continuity/Loop earthing) Conductor). The material and size of protective conductors shall be as specified by the IREL. Unless otherwise specified, GI conductor should be ordinarily used as protective conductor for substation and external lighting earthing and copper for all other areas.
- iii. **Location for Earth Electrodes:** Normally an earth electrode shall not be located closer than 1.5 m from any building. Care shall be taken to see that the excavation for earth electrode does not affect the foundation of the building; in such cases, electrodes may be located further away from the building, with the prior approval of the Engineer-in-charge.
- iv. Protective (Loop earthing/earth continuity) Conductor:
 - a) Earth terminal of every switchboard in the distribution system shall be bonded to the main earth bus.
 - b) Two protective conductors shall be provided for a switchboard.
 - c) A protective conductor shall securely connect the earth connector in every distribution board (DB) to the earth bus.
 - d) All metallic switch boxes and regulator boxes in a circuit shall be connected to the earth connector in the DB by protective conductor.
 - e) Provision should be given for the testing of earth electrodes by connecting a group of rod driven electrodes to the main earth grid through a bolted link adjacent to the electrodes in a sunken concrete box. Simpler disconnecting arrangements are not acceptable.

- f) All non-current carrying metallic parts, vessels, structures, cable trays, supports, stockyards, shall be earthed and interconnected to the earth bus.
- v. **Marking:** Earth bars/terminals at all switch boards shall be marked permanently, either as E or as Main earth terminal shall be marked "Safety Earth – Do Not Disconnect".
 - a) Lightning protection structure against lightning" shall be followed.
 - b) The size and number of earth electrodes, interconnection strips and conductor sizes shall be suitably designed.
- vi. Principal Components:
 - a) The principal components of a lightning protective system are:
 - (i) Air terminations
 - (ii) Down conductors
 - (iii) Joints and bonds
 - (iv) Testing joints
 - (v) Earth terminations
 - (vi) Earth electrodes.
- vii. **Materials:** The materials of air terminations, down conductors, earth termination, etc. of the protective system shall be reliably resistant to corrosion, or be adequately protected against corrosion. All air terminations and down conductors shall be of GI.
- viii. **Air terminations:** Air termination networks may consist of vertical or horizontal conductors, or combinations of both. For the purpose of lightning protection, the vertical and horizontal conductors are considered equivalent and the use of pointed air terminations, or vertical finials, is, therefore, not regarded as essential. A vertical air termination, where provided, need not have more than one point, and shall project at least 30 cm, above the object, salient point or network on which it is fixed. For a flat roof, horizontal air termination along the outer perimeter of the roof shall be used. For a roof of larger area a network of parallel horizontal conductors shall be installed. No part of the roof should be more than 9 m from the nearest horizontal protective conductor. Horizontal air terminations should be carried along the contours such as ridges, parapets and edges of flat roofs, and where necessary, over flat surfaces, in such a way as to join each air termination to the rest, and should themselves form a closed network.
 - a) All metallic projections including reinforcement, on or above the main surface of the roof which are connected to the general mass of the earth, should be bonded and form a part of the termination network. If portions of a structure vary considerably in height, any necessary air terminations or air termination network for the lower portions should be bonded to the down conductors of the taller portions, in addition to their own conductors.

- ix. **Down Conductors:** The number and spacing of down conductors shall be suitably designed.

3.1.10 Fixing of cable trays:

- i. The supplied cable trays are to be fixed on the structural as per instruction of EIC or drawing provided to the Agency. The cable tray lay out and the cable schedule after completion of cable laying to be provided .The cables laid for different purpose shall have an identification tag attached at both end for easier identification and tracing of the cables. At interval of 1meter approximately the cable trays shall be supported.
- ii. Motor Power Supply and Energization Including Testing:
 - a) Power supply connection to the motors by proper socketing and glanding
 - b) Double Earthing connection to the motors
 - c) Meggering of the motor before connection
 - d) Control testing of the motor before connection
 - e) Direction of rotation testing of the motor, setting of overload
 - f) No load test running of the motor, checking for single phasing
 - g) Test report of each of the motor drive
- iii. Installation of the Various Miscellaneous Items
 - a) The specification of various miscellaneous items are mentioned in the technical specification and they shall be of the same quality as mentioned and shall be used during execution of various electrical works.
 - b) Installation of the rubber mats-issue of material transportation to site and laying as per instruction of EIC
 - c) Installation of CO2 fire extinguisher-issue of material transportation to site and laying as per instruction of EIC on appropriate supports fabricated by himself. numbering and indication mark fixing
- iv. List of approved Makes of Equipment and Materials
 - a) The scope of this section covers the recommended makes of equipment, material components.
 - b) The makes of material offered by the contractor shall be indicated along with offer for proper evaluation of the offer and shall be one of the recommend makes. In the absence of such indication, the decision rests with the Purchaser. The makes of material recommended are exhibited in respective section. The offers shall be strictly on the basis of the makes recommended.

- c) Where specified make and model nos. are indicated in the specification/schedule of requirements/drawings, the bidder should quote for the same items. The bidder shall give a list of preferred makes of all brought out items along with the offer. Contractor shall get approval from Client before proceeding with procurement. Further if any other make of cables, cable glands, sockets are proposed by party then acceptance of the same is in the sole discretion of IREL and after approval of EIC. Mere supply of any make of material by any supplier in past to IREL in some particular order cannot be claimed as the accepted brand of material for supply in this contract.

1	Indicating lamps LED type	L & T, Siemens, Technic, Schneider, ABB
2	Cables	
	a. MV cables	Gloster, Nicco, Havells, Torrent, Universal, CCI, Polycab, KEI Make to be specified by bidder in offer.
	b. Control cables	Finolex, RR, Lapp, Havells, Nicco, Gloster, poly cab, KEI, universal, or any reputed make subject to approval of EIC/Consultant. Make to be specified by bidder in offer.
3	660/1100 V grade PVC insulated single core unsheathed wire with copper conductor	Gloster, Havells, poly cab, Finolex or any reputed make subject to approval of EIC/Consultant . Make to be specified by bidder in offer.
4	Indicating Instruments	AE, Meco, Rishab, Konzerv, Schneider
5	Push button station	L & T, Siemens, ABB, Schneider, Ex-Protecta, FCG, Baliga
6	Capacitor	ABB, EPCOS, L&T, Shreem
7	Contactor, Timer and overload relays	L&T, Siemens, Schneider, ABB,

8	Conduits		Any make with ISI mark
9	High voltage insulation mat (PVC insulated electrical make)		Any make with ISI mark
10	Modular switches	-	Crab tree, Siemens, ABB, , Legrand, L&T,Schneider
12	MCB		Hager, Schneider, ABB, Legrand, Siemens, BCH
13	MCB DB		Legrand, ABB, Siemens, Schneider, BCH
14	ELCB + MCB (RCBO)		Legrand, Siemens, Schneider, ABB, Hager, BCH
15	Selector switches		Essen, Kaycee Switron, Reco, L & T
16	Fuse/Fuse Carrier		L & T, Schneider, Siemens, ABB, BCH
17	Cable glands		Lapp kabel, Baliga, Gripwel, HMI, Denson, Multipressings, Yamuna Gasses

3.1.11 **Statutory Approval** All the designs, supplies, installation, testing, and commissioning works shall be carried out complying to Indian Electricity Rules and act as amended up to date. Contractor's scope shall include providing all required information, reports, data and full assistance towards compliance of any statutory requirement prevailing in India and approval of competent authority if required and any modification are needed in the power distribution scheme, the same shall be incorporated suitably and the supply, installation, testing and commissioning shall be meeting all such requirements from Electrical Inspectorate. The scope includes obtaining approval from DGMS(Electrical) towards energization of the electrical installations.

4 TECHNICAL SPECIFICATION OF INSTRUMENTATION PART

4.1 Instrumentation Specification In General

4.1.1 Electro-Magnetic Flow meter

- i. Size of Flow Meter: As per design requirement.
- ii. Make: Yokogawa/ABB/E&H/Khrohne/SIEMENS.
- iii. Application: To measure process water flow
- iv. Type: Remote model.
- v. Electrode material: Tungsten Carbide.
- vi. Flow Tube Lining: Poly Urethane (PU)
- vii. Type of Flow meter: Flange Type.
- viii. Flow Range: As per requirement
- ix. Construction: tube material: SS 304/SS316.
- x. Excitation: Dual frequency
- xi. Accuracy: Minimum +/- 0.5% of Reading
- xii. Flow pressure: 6 kg/cm²
- xiii. Ambient Temp.: Maximum 45degree centigrade.
- xiv. Transmitter: remote type.
- xv. Transmitter Output: 4 to 20mA (Isolated)
- xvi. Source Voltage: 80-264 VAC,50 Hz
- xvii. Display: 7 segment LCD, Back light
- xviii. Earthing ring on both sides of flow tube,
- xix. Facility for Converter: Auto zero adjustment, Totalization display, Variable damping (From 0.1 sec) test output, Self test, high low limit alarm, flow direction selection, Lighting protection, empty pipe detection, Eng. Unit display, Self calibration facility.
- xx. **Enclosure:**
 - a) Enclosure should be IP-65
 - b) Painting – Epoxy paint.
- xxi. Any special cables required for interconnecting different signals from panel to field Instruments at a max. Length of 10 meters is to be considered in the offer.
- xxii. Technical Manual: Party should provide original Manuals describing Installation, testing, calibration, operation and maintenance, fault finding analysis.

- xxiii. Party should submit detail Technical literature along with quotation for technical Scrutiny.
- xxiv. Calibration certificate of the flow meter to be provided by the party during supply.
- xxv. Installation & Commissioning:
 - a) Supervision of installation & commissioning is to be done by the party
- xxvi. NOTE:
 - a) Party is to submit quotation for the total system with detail technical literature and GA drawing with break up prices. In absence of these details quotation will not be considered for technical scrutiny.
 - b) Party is to submit their credential along with documentary evidences.
 - c) All cables required to interconnect different units of the system should be considered.

4.1.2 PLC System:

- i. **Scope of work:** The scope of work includes supply of PLC along with accessories as per the technical specification mentioned below:
- ii. **PC cased SCADA/HMI.**
- iii. **Our requirement:** The PLC control hardware shall be installed at location with proximity to the thickener and filter press. The communication shall be PC compatible with Ethernet protocol (RJ45 connection) for ease of integration.
- iv. Scope of Work:
 - a) The detail engineering, Installation, commissioning and testing and handing over is to be done by you. PLC control panel shall be installed in a control cabin at suitable location.
 - b) Development of PLC Program, Development of SCADA/HMI, Integration of Existing PLC to New PLC hardware. The Ladder Logic of PLC and HMI to be followed as per existing PC Based control system.
 - c) Backup of PLC Program as well as operator station HMI program will be taken and saved on Pen drives/CD as applicable.
 - d) Engineering Modifications, if any shall be carried out and changes should be properly documented in both soft & hard formats.
- v. The total system supply, Installation, commissioning, Detail engineering, PLC & SCADA/HMI Programming as per our requirement, Integration with existing PLC, testing along with plant commissioning activities and final handing over is your scope. If required any modification of plant requirement during commissioning is to be done by the agency.

- vi. PLC and SCADA/HMI shall be of reputed make like Siemens /Schneider/ABB/Yokogawa/Emerson/Allen Bradley/Honeywell with License issued in IREL's name.
- vii. Spare I/O modules (6 nos each) to be provided along with PLC.
- viii. HMI shall be minimum 19" size.

4.1.3 UPS

- i. **Scope of work:** The scope of work includes supply of UPS System along with suitable accessories essential to provide 30 minutes backup for the PLC system at maximum.

4.1.4 Cable tray:

- i. As per the cable tray dimensions given in electrical section.

4.1.5 Cables

- i. 3 Core x 1.5 sq.mm of 1.1 kV grade PVC insulated PVC sheathed Flexible copper cable Confirming to IS: 694-1990 or its latest version in 100 metre coil.
- ii. Make: Finolex, L&T, Polycab, Rhino,
- iii. Items shall have minimum guarantee/ warrantee for a period of 12 months from the date of supply.
- iv. For 3 core cables colour of insulation shall be red, black, yellow or green.

4.1.6 Air Conditioning:

- i. As per the latest design.

4.1.7 Computers and furnitures

- i. As per the latest design and model.

4.1.8 Display Screen:

- i. **Item:** LED Monitor For HMI/SCADA system.
- ii. **Minimum Specification:**
 - a) **Video Features:** LED Type, UHD, Screen size: 139 cms, Resolution: 3840 X 2160
 - b) **Response Time:** 8ms, viewing angle: H178/V178.
 - c) **Audio Features:** Built-in speaker, Sound Output: 2 X 10 W, Surrounding sound, Balance, Bass, Treble.
 - d) **Convenience Features:** Auto channel search, Sleep timer, USB clone.
 - e) **Input/output:** HDMI – 4 nos., Component, Composite, RF Input, USB Port: 1 no

- f) **Power Supply:** 100 V AC to 240 VAC, 50 Hz,
- g) **Accessories:** Wall mounting Kit, Connecting cable from PC to monitor (30 mtrs.), Remote & Batteries.
- h) **Warranty:** Minimum 1 year from date of installation.
- i) **Make:** Sony / LG / Samsung/Haier/Panasonic.
- j) **Note:**
 - (i) The above LED monitor will be used for remote monitoring of HMI/SCADA screen at HUS control room. The LED monitors will be connected parallel to the HMI/SCADA for viewing the same screen on both. Any additional item required for installation of Monitor the same should be provided free of cost.
 - (ii) Party has to install the monitor & commission as per the above requirement free of cost.
 - (iii) Party should submit authorized dealership certificate for the item along with the quotation.

ANNEXURE-3:

1 SAFETY CODES AND ROLES SAFETY CODE

- 1.1 Suitable scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration work which can be done safely from ladders. When a ladder is used, it shall be of rigid construction made either of wood or steel. The steps shall have a minimum width of 450 mm and a maximum rise of 300 mm. Suitable hand holds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to 1($\frac{1}{4}$ horizontal and 1 vertical).
- 1.2 Scaffolding or staging more than 4m above the ground floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly Working platform, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform, gangway or stairway is more than 4m above ground levels or floor level, they shall be closely boarded and shall have adequate width and be suitably fenced as described in (2) above.
- 1.3 Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1mtr wherever there are open excavations in ground, the shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.
- 1.4 Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m in length while the width between side rails in rung ladder shall in no case, be less than 290 mm for ladder upto and including 3 m in length. For longer ladder this width shall be increased at least 20 mm for each additional metre of length.
- 1.5 A sketch of the ladder and scaffolds proposed to be used shall be prepared and approval of the company obtained prior to construction.
- 1.6 All personnel of the contractor working within the plant site shall be provided with safety helmets. All welders shall wear welding goggles while doing welding work and all metal workers shall be provided with safety gloves. Persons employed on metal cutting and grinding shall wear safety glasses.
- 1.7 Adequate precautions shall be taken to prevent danger from electrical equipment .No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

- 1.8 All trenches, 1.25m or more in depth shall at all times be supplied with at least one ladder for each 30m in length or fraction thereof. The ladder shall be extended from the bottom of the trench to at least 1m above the surface of the ground. Sides of trenches which are 1.5 m or more in depth shall be stepped back to give suitable slope of securely held by timber bracing so as to avoid the danger of sides collapsing. The excavated material shall not be placed with 1.5 m of edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.
- 1.9 The contractor shall take all measures on the site of the work to protect the public from accidents and shall be bound to bear the expenses of defense of every suit, action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precautions and to pay such persons or which may with the consent of the contractor, be paid to compromise any claim by any such person.
- 1.10 Before any demolition work is commenced and also during the process of the work:-
 - 1.10.1 All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - 1.10.2 No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.
 - 1.10.3 All practical steps shall be taken to prevent danger to persons employed from the risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe
- 1.11 All necessary personnel safety equipment as considered adequate by the Company shall be kept available for the use of his persons employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned.
 - 1.11.1 Workers employed on mixing alphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - 1.11.2 Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eye shall be provided with protective goggles.
 - 1.11.3 Those engaged in welding works shall be provided with welder's protective eyesight lids.
 - 1.11.4 Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - 1.11.5 When workers are employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.
- 1.12 Use of hoisting machines and tackle including their attachments, anchorage and support shall conform to the following standards or conditions.

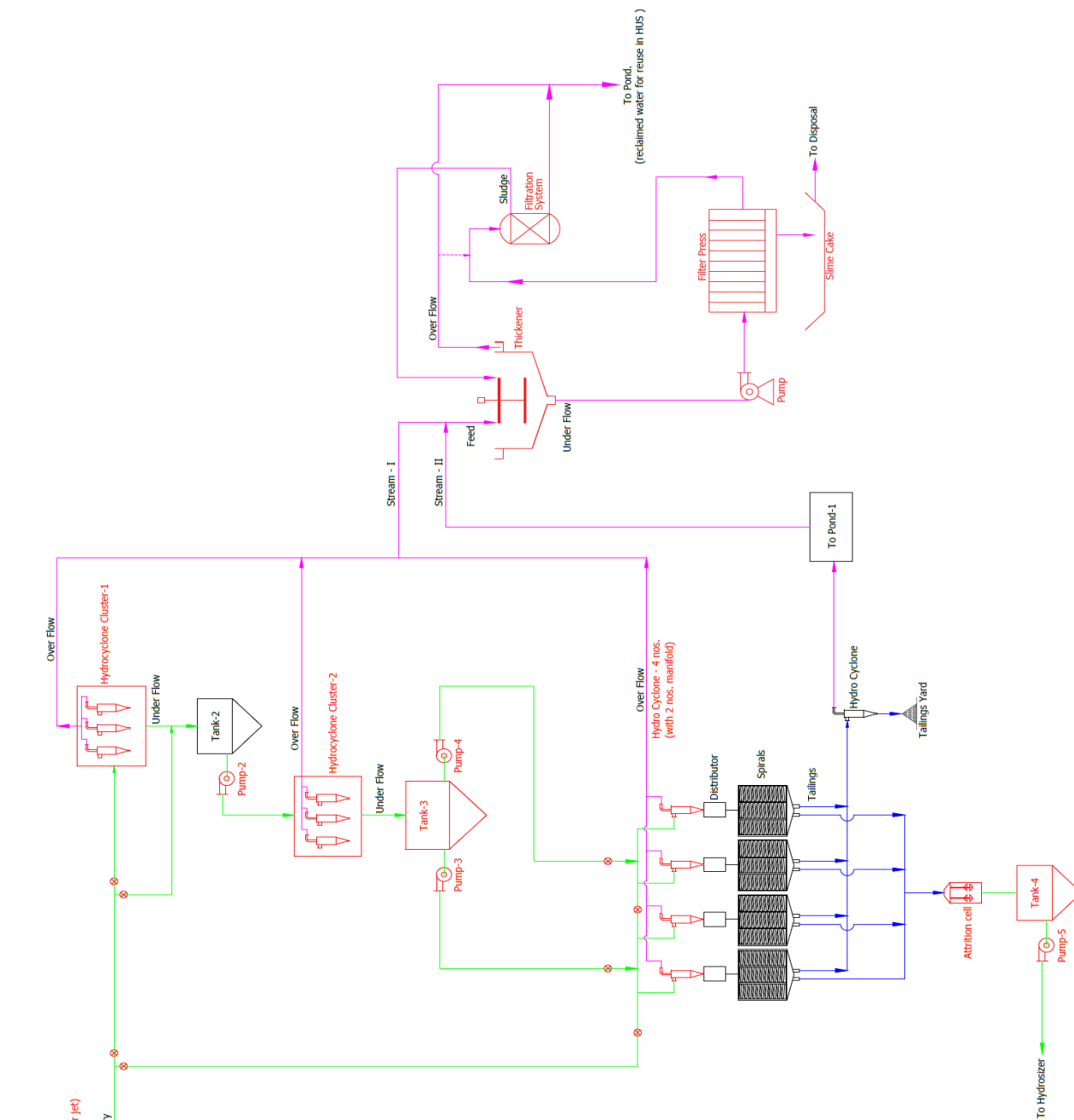
- 1.12.1 These shall be of good mechanical construction, sound material and adequate strength and free from patent defect and shall be kept in good repair and in good working order.
- 1.12.2 Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.
- 1.12.3 Every crane drive or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be in charge of any hoisting including any scaffolding which or give signals to operator.
- 1.12.4 In case of every hoisting machine and of every chain ring hook, shackle shovel and pulley block used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load expect for the purpose of testing.
- 1.12.5 In case of departmental machines, the safe working load shall be notified by the company. As regards contractor's machines, the contractor shall notify the safe working load of the machine to the Company whenever he brings any machinery to site of work and get it verified by the company.
- 1.13 Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards, hoisting appliances should be provided with such means as will reduce to the minimum the risk of any part of suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary shall be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.
- 1.14 All scaffolds, ladders and other safety device mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.
- 1.15 These safety provisions shall be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
- 1.16 To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the labour officer or the company or its representatives.
- 1.17 Notwithstanding the above clauses, there is nothing in these to exempt the contractor from the operations of any other Act or Rules in force in the Republic of India.

2 SAFETY RULES

- 2.1 The contractor shall follow the safety regulations as prescribed in the tender and Indian standards. He shall provide necessary safety appliances to his employees as instructed by the Engineer –in-charge/ safety officer deputed by the Company depending upon the nature of work.
- 2.2 In case of an accident resulting in any rest of disability to the workmen the same should be immediately reported to the safety officer/Engineer-in-charge.
- 2.3 Any person found smoking in the non-restricted area work site /company premises or under the influence or alcoholic or any intoxicating drugs on duty is unfit for duty and shall not be allowed to work. His work permit should be confiscated and he should be sent out of the premises of the work.
- 2.4 Drums or other make shifts must not be used in place of ladders or work benches or supports on any job.
- 2.5 First aid kits or boxes and stretchers should be readily assessable at all times with the contractors.
- 2.6 For all work that cannot be done from the ground level or from part of any permanent structure or from other available means of support, soundly constructed scaffoldings of adequate strength shall be used as a safe means of access of places of work.
- 2.7 All scaffolding shall be securely supported or suspended and wherever necessary be properly braced to ensure stability.
- 2.8 Defective scaffolding or make shift must not be provided All scaffolds must be inspected by a competent person in charge before commencement of work.
- 2.9 Chains, ropes or other lifting materials used for the suspension of scaffolds must be of adequate strength and be tested by competent authority.
- 2.10 The platforms of suspended scaffolding shall be sufficiently wide. Suspended scaffoldings shall have hand rail of about 1 mtr, height from the floor of the platform. Such scaffolding or staging shall be fastened to prevent it from swaying away from the structure.
- 2.11 All sides of the platform from which a person is liable to fall shall be provided with guard rails to a height of at least 1 meter with the toe boards of at least 15cms high so placed as to of prevent the fall of material and tools from the platforms.
- 2.12 Every ladder shall be securely fixed at top and bottom. A ladder more than 5 metres long shall have a prop.
- 2.13 Spacing between the side rails of the ladder shall not be less than 45 cms and uniform step spacing shall not exceed 30 cms.

- 2.14 Whenever it is necessary to work at elevated places above 4 meter not adequately protected by railing, safety belts with life lines securely tied to some firm structure or other support which is independent of the equipment on which the person is working must be worn.
- 2.15 Nobody should be allowed to work at elevated places above 4 meter without wearing safety belts. As an additional precaution, safety nets made of coir rope or nylon or any other suitable material should be hung at suitable elevation to prevent people and equipment falling below.
- 2.16 Dropping or throwing materials from roof structure or other elevated position is prohibited.
- 2.17 Where work is going overhead, the area below should be cordoned. If it is not possible to cordon the area caution sign caution, Men working above should be placed.
- 2.18 Helmets (made of fibre glass or any other suitable material conforming to IS specification) must be used by all employees working in shuttering or staging jobs, material handling, erection jobs or where the chances of falling objects are present or where there is a possibility of a person striking against projecting objects, etc.
- 2.19 All necessary personnel safety equipment such as face masks, safety helmets, safety boots, safety belts, gloves safety goggles etc. as considered adequate by the company have to be kept available for the use for persons employed at the site of work and maintained in a condition suitable for immediate use and the contractor shall take steps to ensure proper use of equipment by the workers.
- 2.20 The contractor shall furnish along with the tender the type of staging from work type of access for men, materials and the construction technique he proposes to use for the work.
- 2.21 The areas where painting work is being done shall be kept adequately ventilated by the agency executing the work and shall meet the approval of the Company.
- 2.22 The erection of structurals shall only be allowed with the help of crane having sufficient boom height and safe load carrying capacity. Before starting erection work the contractor shall submit an erection procedure which shall be vetted by E.I.C. All lifting equipments/devices shall have valid test certificates.

Annexure-4: Flowsheet OF "De-Sliming System at HUS"





**DRAFT AGREEMENT
FOR
INSTALLATION OF DE-SLIMING
SYSTEM AT HUS (MK Unit)
ON
ENGINEERING PROCUREMENT
CONSTRUCTION (EPC) BASIS**



IREL (India) Limited
(A Govt. of India Undertaking – Dept. of Atomic Energy)
Plot No. 1207, Veer Savarkar Marg, Near Siddhi Vinayak
Temple,
Prabhadevi, Mumbai- 400028. Website: <http://irel.co.in>

[To be printed on non-judicial stamp paper of appropriate value]

**DRAFT AGREEMENT
INSTALLATION OF DE-SLIMING SYSTEM
AT HUS, IREL-MK, TAMIL NADU
ON ENGINEERING PROCUREMENT CONSTRUCTION (EPC) BASIS**

THIS AGREEMENT No.....made on thisday
of [month] Two Thousand and Twenty Five in [place], India

BETWEEN

IREL (India) Limited (IREL) incorporated under the Companies Act, 1956/2013 and having its registered office at PLOT NO. 1207, VEER SAVARKAR MARG, NEAR SIDDHI VINAYAK TEMPLE, PRABHADEVI, MUMBAI-400028, INDIA and having one of its Mineral Separation Units located at Manavalakurichi, Kanyakumari District, Tamil Nadu hereinafter referred to as "**IREL-MK**", which term or expression unless excluded by or repugnant to the context or the meaning thereof shall be deemed to include its successors and permitted assigns, OF THE ONE PART,

AND

.....(**Name of Company of
Selected Bidder**), an agency organized and existing under Companies Act 1956/2013¹ and having its Registered / Principal Office at(hereinafter referred to as "**Agency**"), which term or expression unless excluded by or repugnant to the context or meaning thereof shall be deemed to include its successors and permitted assigns, OF THE OTHER PART,

AND WHEREAS

- A. IREL intends to process the raw material from River linking project site in Sathankulam area and Midalam deposit. The raw material (Teri sand) has approximately 20% slime content. IREL is intent to remove the slime content from the feed sand in Heavies Up-gradation section based on the preliminary study report suggested by CSIR-NML, Chennai, (the "Project").
- B. As part of this endeavor, IREL has decided to appoint an EPC Agency for Installation of De-sliming System at HUS, IREL-MK.
- C. IREL had floated a RFP number dated wherein [Name of Selected Bidder] had participated and met the qualification requirements and other terms and conditions. IREL has accepted the Bid submitted by the [Name of Selected Bidder] and now appoints it as Agency, on the terms and conditions for the aforesaid arrangement as specified in the RFP and Agreement, to undertake Works.
- D. The Agency warrants that it is having requisite competence in the business, inter-alia of, and intends to undertake engineering, procurement, fabrication, inspection, transportation, insurance, storage, handling, dismantling & removal of debris, construction, installation, erection, testing, commissioning, and demonstration of guarantee of the proposed De-sliming system and as per the terms and conditions more particularly appearing hereinafter;
- E. The Agency warrants that it has satisfied itself to the site conditions and has acquainted itself in general with all local conditions, workability on the site, facility for transport & storage of materials, availability of labour and materials and all its responsibilities for compliance to Applicable Laws and regulations and has obtained all other information on its own both as to risk, contingencies & other circumstances which may influence or affect the work and other requisites for proper execution of the Agreement after due inspection of site and surrounding and scrutiny of other related factors, probable contingencies.

NOW IT IS HEREBY AGREED AND DECLARED BY AND BETWEEN THE PARTIES AS FOLLOWS:

Article 1 Definitions

- 1.1. **"Agreement"** shall mean, this Agreement between IREL and the Agency duly signed by both for undertaking engineering, procurement, construction and commissioning activities for De-sliming system, as may be amended, modified or supplemented from time to time;
- 1.2. **"Agreement Value"** shall have the meaning set forth in Sub-clause 18.1.2;
- 1.3. **"Agency Event of Default"** shall have the meaning set forth in Sub-clause 27.4.1;
- 1.4. **"Applicable Law"** shall mean all applicable statutes, laws, by-laws, rules, regulations, orders, ordinances, protocols, codes, guidelines, policies, notices, directions, judgments, decrees or other requirements or official directive of any governmental authority or court or other law, rule or regulation approval from the relevant governmental authority, government resolution, directive, or other government restriction or any similar form of decision, or determination, or any interpretation or adjudication having the force of law in India;
- 1.5. **"Battery Limits"** shall mean the physical location(s) as defined in the Terms of Reference in Annexure-III;
- 1.6. **"Change in Applicable law"** shall mean If, after Effective Date of this Agreement, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or amended (which shall be deemed to include any change in interpretation or application the competent authorities). Such changes will not invalidate the Agreement but the impact of the changes will be settled on mutually agreed terms.
- 1.7. **"Commissioning"** means operation of the De-sliming system by the Agency to a level of output as provided in Article 12 (Commissioning) hereof or as specified in Terms of Reference in Annexure-III to Agreement.
- 1.8. **"Commissioning Certificate"** is the Certificate to be issued by IREL as per Clause 12.4 hereof.
- 1.9. **"Construction"** include, unless the context otherwise requires, survey and investigation (if required), engineering, procurement, supply of plant, materials, equipment, labour, delivery, transportation, installation, processing, fabrication, testing, and commissioning of the Project, including maintenance during the Construction Period, removing of defects, if any, and other activities incidental to the Construction and **"construct"** shall be construed accordingly;
- 1.10. **"PCB"** shall mean Pollution Control Board;
- 1.11. **"Dimensions"** shall mean the dimension as per metric system;
- 1.12. **"Defect"** means any defect or deficiency in Construction of the Works or any part thereof, which does not conform with the Specifications and Standards;

- 1.13. **"Defect Liability Period"** means the period of validity of the warranties given by the Agency commencing from the date of issuance of Final Acceptance Certificate of the De-sliming system, during which the Agency is responsible for defects with respect to the De-sliming system as detailed in Article 22 (Defect Liability) hereof.
- 1.14. **"Drawings"** means all of the drawings, calculations and documents pertaining to the Project as set forth in Terms of Reference in Annexure-III, and shall include 'as built' drawings of the Project as well;
- 1.15. **"Engineer-in-charge"** means the person appointed by IREL in the manner provided in Article 9 hereof and to perform the duties delegated by IREL.
- 1.16. **"Effective Date"** shall mean the date of signing of Agreement;
- 1.17. **"Final Acceptance Certificate"** shall mean the certificate issued by IREL as per Article 13
- 1.18. **"Financial Year"** shall refer to the Indian financial year commencing April 1st and ending on the following March 31st or as notified and amended by the Government of India. It shall refer to a fiscal year or the accounting period of 12 months;
- 1.19. **"Good Industry Practice"** means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced contractor engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Agency in accordance with this Agreement, Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner;
- 1.20. **"Governmental Approval"** shall mean all permits, licenses, authorizations, consents, clearances, decrees, waivers, privileges, no-objection certificate or approvals from and the Government of India and/or the Government of Tamil Nadu or the respective nodal agencies necessary for development and Construction of the De-sliming system and the completion of the Project;
- 1.21. **"GOI" or "Government"** shall mean the Government of India including any and / or all ministries thereof and /or departments thereof having duly constituted authorities to grant approvals under any applicable statutes, rules and regulations enforced from time to time;
- 1.22. **"Implementation Plan"** shall cover, but will not be limited to key tasks to be undertaken, Annexure of these tasks, associated costs, responsibility allocation, monitoring mechanism, etc. for executing the Scope of the Project as per Clause 16.1 of this Agreement;
- 1.23. **"Indemnifying Party"** and **"Indemnified Party"** shall have the meaning set forth in Clause 24.1;
- 1.24. **"IREL Event of Default"** shall have the meaning set forth in Clause 27.4.2;
- 1.25. **"Intellectual Property"** means all patents, trademarks, service marks, logos, get-up, trade names, internet domain names, rights in designs, blue prints, programmes

and manuals, drawings, copyright (including rights in computer software), database rights, semi-conductor, topography rights, utility models, rights in know-how and other intellectual property rights, in each case whether registered or unregistered and including applications for registration, and all rights or forms of protection having equivalent or similar effect anywhere in the world;

- 1.26. **"Letter of Intent" or "LOI"** means based on the offer of Bidder, IREL issues its acceptance to the said offer requesting Selected Bidder to sign the Agreement;
- 1.27. **"Material"** are all the supplies used by the Agency for Construction and Commissioning of the De-sliming system under Supervision of the Agency;
- 1.28. **"Metric tonne" or "t"** for the purpose of this Agreement shall be used for the weighment;
- 1.29. **"Parties"** shall mean the parties to this Agreement collectively and **"Party"** shall mean any of the parties to this Agreement individually;
- 1.30. **"Performance Bank Guarantee"** shall have the meaning set forth in Clause 7.1
- 1.31. **"Performance Guarantee Test"** means the test(s) specified in Clause 8 of Part-I of the Terms of Reference to be carried out to ascertain whether the De-sliming system is able to attain the performance guarantees specified in the Terms of Reference in Annexure-III to Agreement.
- 1.32. **"Preliminary Notice"** shall have the meaning set forth in Sub-clause 27.6.1;
- 1.33. **"Products"** shall mean the output from the De-sliming system;
- 1.34. **"Project"** shall mean the De-sliming System to be installed at IREL-MK, Tamil Nadu as detailed in Terms of Reference in Annexure-III;
- 1.35. **"Project Milestone"** means the project milestone as set forth under Sub-clause 18.2.1 and includes the Works Completion Date;
- 1.36. **"Scope of Work" or "Scope of the Project"** shall mean the work specified in Clause 16.1 of the Agreement and shall include all the activities towards engineering, procurement, construction and commissioning activities of De-sliming system.
- 1.37. **"Security Deposit"** shall have the meaning set forth in Clause 6.1;
- 1.38. **"Site"** of the Project shall include the land, buildings, structures, road works, etc., as described in the RFP and this agreement;
- 1.39. **"Specifications and Standards"** shall mean, the technical specifications, standards, schedules, statements of technical data, performance characteristics, values and all such particulars relating to the quality, quantity, capacity and other requirements for the Project, as set forth in Terms of reference in Annexure-III, and any modifications thereof, or additions thereto, as included in the design and engineering for the Project submitted by the Agency to, and expressly approved by, IREL;

- 1.40. **"Termination Notice"** means a communication in writing by a Party to the other Party regarding Termination in accordance with the applicable provisions of this Agreement;
- 1.41. **"Third Party"** means any person or entity other than IREL or the Agency
- 1.42. **"Time"** shall be reckoned by months, day and hours. Month being equivalent to the calendar month according to the Gregorian calendar. The day or days unless herein otherwise expressly defined shall mean calendar day or days of 24 hours each;
- 1.43. **"Works"** shall mean engineering, procurement, fabrication, inspection, transportation, insurance, storage, handling, dismantling & removal of debris, construction, installation, erection, testing, commissioning, and demonstration of guarantee of the De-sliming system, equipment and associated facilities in relation to the De-sliming system to be undertaken by the Agency. It will also include other necessary works in relation to De-sliming system including establishment of infrastructural facilities, development activities and all other related, incidental and ancillary works, which are to be undertaken by the Agency under this Agreement as more fully specified in Article 16 to this Agreement and which include all extra or additional or any work of emergent nature, which in the opinion of IREL becomes necessary during the progress of the works.
- 1.44. **"Works Completion Date"** shall be date of issuance of Final Acceptance Certificate as defined in Article 13.

Article 2 Interpretations/ Defined Terms

(A) Definitions

Unless the context of this Agreement otherwise requires

- 2.1. The paragraph headings and numbering are for convenience only and shall be ignored in the interpretation of this Agreement;
- 2.2. The singular includes the plural and vice versa;
- 2.3. Words of any gender are deemed to include the other gender;
- 2.4. The term "Clause" refers to the specified Clause of this Agreement;
- 2.5. The terms "hereof", "herein", "hereby", "hereto" and derivative or similar words refer to this entire Agreement or specified Sections of this Agreement as the case may be;
- 2.6. The words "include" and "including" shall be deemed to be followed by "without limitation" or "but not limited to" whether or not they are followed by such phrases or words of like import;
- 2.7. Terms defined under Definitions shall have the meanings ascribed thereto in that Clause when used elsewhere in this Agreement;
- 2.8. Reference to any agreement, enactment, ordinance or regulations includes any amendment or replacement thereof in whole or in part;
- 2.9. Reference to clauses, paragraphs and annexures are unless the context otherwise requires, references to clauses, paragraphs and annexures respectively, of this Agreement;
- 2.10. The headings are inserted for convenience only and shall not affect the Construction of the Agreement;
- 2.11. Any act which is to be done on a day which is not a business day, must be done by the next business day;

(B) Other Terms

- 2.12. Other terms may be defined elsewhere in the text of this Agreement and, unless otherwise indicated, shall have such meaning throughout this Agreement;

(C) Supersession

- 2.13. Unless otherwise mentioned, this Agreement supersedes all previous correspondence, communications, understandings, representations, and warranties between the Parties;

(D) Discrepancies, if any in the Agreement

- 2.14. The Agreement and the schedules, annexures, enclosures shall be read harmoniously as being mutually explanatory and as part of a complete set. In case of any repugnancy/conflict between the Agreement and the schedules, annexures, enclosures, the provisions of the Agreement shall prevail;

- 2.15. Any error in description, quantity or rate in schedule or quantities or omission there from, shall not vitiate the Agreement or release the Agency from discharging his obligations under the Agreement including execution of the Works;
- 2.16. If the Agreement and the schedule, annexure, enclosure documents provide for different standards of product, workmanship or finish, the Agency must specify those of the highest standard provided in any part of the Agreement;
- 2.17. The Agreement may be signed in one or more counterparts and each counterpart shall have the same effect as the original;
- 2.18. The Agreement shall come into force on and from the Effective Date.

Article 3 Business Purpose

It is expressly understood that;

- 3.1. The Agency shall undertake Works for establishing the De-sliming system in conformance with the Terms of Reference in Annexure-III of this Agreement, and in accordance with all legal requirements, approvals and Good Industry Practices.

Article 4 Conditions Precedent

- 4.1. Effective Date of the Agreement
- 4.2. This Agreement shall be deemed to have come into effect on the date of signing of the Agreement (the "**Effective Date**") which shall be within twenty one (21) days from the date of receipt of LOI. However, the roles, responsibilities, warranties, obligations and other terms and conditions as mentioned in the Agreement shall be deemed to have come into effect from the date of acceptance of LOI.
- 4.3. Conditions Precedent of IREL
 - 4.3.1. Provide access of the land/ space for setting up of the De-sliming system to the Agency.
- 4.4. Conditions Precedent of the Agency
 - 4.4.1. Submission of the Implementation Plan (L-3 level network) to IREL;
 - 4.4.2. Obtaining of all necessary Governmental Approvals and clearances for commencement of the Works as may be required under Applicable Law;
 - 4.4.3. Agency shall submit, on the date of signing of this Agreement or within twenty one (21) days from the date of receipt of LOI, whichever is earlier, a Security Deposit as specified in Article 6 of this Agreement.
- 4.5. All the Conditions Precedent in Clause 4.4 shall be achieved within 7 days of Effective Date unless extended in writing by IREL at its sole discretion. If the Conditions Precedent under this Clause 4.5 are not satisfied within the above-mentioned period, IREL shall have the right to terminate the Agreement, by notice in writing and forfeit the Security Deposit.
- 4.6. Provided that upon request in writing by the Agency, IREL may, in its sole discretion, waive any of the Conditions Precedent set forth in this Clause 4.4 or grant extension of time for fulfillment thereof, as the case may be.
- 4.7. Best Endeavors

Both Parties shall make best endeavors to provide assistance to the each other wherever possible in relation to the fulfillment of the Conditions Precedent by them.

Article 5 Duration of Agreement

- 5.1. This Agreement shall take effect from the Effective Date of the Agreement and shall remain in force till completion of operation & maintenance assistance subsequent to commissioning (for a period of fifteen (15) months). In case of any delay in commissioning of the project by the Agency the duration of agreement shall be suitably extended.
- 5.2. Within twenty one (21) days of Effective Date of this Agreement, the Agency shall submit an Implementation Plan giving Project Milestones of scheduled progress on monthly basis.
- 5.3. Expiry of Agreement
Unless terminated earlier pursuant to Clause 27.6, this Agreement shall, unless extended by the Parties by mutual consent, expire upon issuance of "Final Acceptance Certificate" by IREL.

Article 6 Security Deposit

- 6.1. Agency shall submit, within twenty one(21) days from the issuance of LOI or at the time of signing of Agreement, whichever is earlier, a Security Deposit(the "**Security Deposit**") in the form of a demand draft/ banker's cheque/bank guarantee, for an amount equal to five percent (5 %) of the Agreement Value as per Sub-clause 18.1.2.
- 6.2. Bank guarantee shall be as per format given at Annexure-I, valid for seventeen (17) months(2 month beyond the Duration of Agreement) from the date of issue with an additional claim period of ninety (90) days beyond expiry and shall be issued from any scheduled bank. Other instruments for Security Deposit in place of bank guarantee shall be in favour of "IREL (India) Limited" payable at Manavalakurichi, Kalkulam, Kanyakumari, Tamil Nadu;
- 6.3. In case of breach of any of the terms of this Agreement, IREL, at its sole discretion and without prejudice to its other rights, may encash the entire Security Deposit without assigning any reasons to the Agency;
- 6.4. Extension of Security Deposit
 - 6.4.1. The Agency may initially provide the Security Deposit for a period of seventeen (17) months; provided that it shall procure the extension of the validity of the Security Deposit, as necessary, at least 2 (two) months prior to the date of expiry thereof. Upon the Agency providing an extended Security Deposit, the previous Security Deposit shall be deemed to be released and IREL shall return the same to the Agency after submission of the extended Security Deposit.
- 6.5. Forfeiture of Security Deposit

The Security Deposit shall stand forfeited in favour of IREL, without any further notice to the Agency in the following circumstances:

 - 6.5.1. In case of any failure whatsoever on the part of the Agency at any time during performance of his part of the Agreement including the extended periods of the Agreement, where notice is given and time for rectification allowed;
 - 6.5.2. If the Agency indulges at any time in any subletting/ sub-contracting of any portion of the Works without approval of IREL;
 - 6.5.3. If the Agency abandons the Agreement;

Notwithstanding anything in the Agreement, the refund of the Security Deposit, shall be subject to IREL's right to deduct its dues which are payable by the Agency to IREL;
- 6.6. The Security Deposit shall be released (without any interest) only after completion of the Works, subsequent issuance of Final Acceptance Certificate by IREL to Agency and compliance of statutory provisions after deduction of any dues from the Agency arising out of any claim by IREL on the Agency;

Article 7 Performance Bank Guarantee

7.1. Performance Bank Guarantee

- 7.1.1. The Agency shall, for the performance of its obligations hereunder, provide to IREL, within 15 (fifteen) days of the date of receipt of Final Acceptance Certificate, an irrevocable and unconditional guarantee, for an amount equal to 10% (ten per cent) of the Agreement Value, from a Scheduled Bank in the form set forth in Annexure-II (the "Performance Bank Guarantee"). The Performance Bank Guarantee shall be valid for a period of one year, i.e. until the expiry of the Defects Liability Period specified in Article 22, with an additional claim period of 6 (six) months beyond the validity of Performance Bank Guarantee.
- 7.1.2. Until such time the Performance Bank Guarantee is provided by the Agency pursuant hereto and the same comes into effect, the Security Deposit shall remain in force and effect, and upon such provision of the Performance Bank Guarantee, IREL shall release the Security Deposit and Retention Money to the Agency.
- 7.1.3. Notwithstanding anything to the contrary contained in this Agreement, the Parties agree that in the event of failure of the Agency to provide the Performance Bank Guarantee in accordance with the provisions of Sub-clause 7.1.1 and within the time specified therein or such extended period as may be provided by IREL, in accordance with the provisions of Sub-clause 7.1.3, IREL may encash the Bid Security and appropriate the proceeds thereof as Damages, and thereupon all rights, privileges, claims and entitlements of the Agency under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Agency, and this Agreement shall be deemed to have been terminated by mutual agreement of the Parties.

7.2. Appropriation of Performance Bank Guarantee

- 7.2.1. In accordance with Article 22, IREL shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate from the Performance Bank Guarantee the amounts due to it as Damages.

7.3. Release of Performance Bank Guarantee

- 7.3.1. IREL shall release the Performance Bank Guarantee within 30 (thirty) days of the expiry of the claim period of the Performance Bank Guarantee, as the case may be, under this Agreement. Notwithstanding the aforesaid, the Parties agree that IREL shall not be obliged to release the Performance Bank Guarantee until all Defects identified during the Defects Liability Period, have been rectified.

Article 8 Risk Purchase Clause

- 8.1. After signing of Agreement, if the Agency fails to execute the activities outlined in the Scope of Work as per this Agreement or at any time repudiates the order, IREL have the right to forfeit the security deposit and execute the order from other agencies at the risk and cost of the Agency. The cost difference between the alternative arrangements and total contract value will be recovered from you along with other incidental charges. IREL reserves the right to take over the De-sliming system to carry out the unfinished work and proceed with production activities without any payment to the Agency.

Article 9 ENGINEER-IN-CHARGE

- 9.1. The Engineer-in-charge shall represent and act on behalf of IREL at all times during the currency of the Agreement. All notices, instructions, orders, certificates, approvals and all other communications under this Agreement shall be given by the Engineer-in-charge, except as herein otherwise provided.
- 9.2. The Engineer-in-charge shall have authority for
 - 9.2.1. general supervision, follow up of supply and direction of the Works
 - 9.2.2. direction to stop the Works whenever such stoppage may be necessary to ensure the proper execution of the Agreement
 - 9.2.3. to reject all Works and Materials which do not conform to the Agreement
- 9.3. The Engineer-in-charge shall have no authority to neither relieve the Agency of any of his duties or obligations under this Agreement nor except as expressly provided herein-under or elsewhere in the Agreement to order any work involving delay or any extra payment by IREL or to make any variation of or in the Works.

Article 10 INSPECTION, TESTING AND REJECTION

- 10.1. IREL shall be entitled, at all reasonable times during Implementation Plan, to inspect, examine and test on the Agency's premises the materials and workmanship and performance of all Works to be supplied under the Agreement and if part of the said De-sliming system is being manufactured on other premises, the Agency shall obtain and furnish for the IREL permission to inspect, examine and test. Such inspection, examination or testing shall not release the Agency from any obligation under the Agreement.
- 10.2. The Agency shall notify IREL of the date and the place at which any equipment will be ready for testing as provided in the Agreement and IREL may attend at the place so named within fifteen days after the date which the Agency has stated in his notice. IREL shall notify to the Agency in writing of his intention to attend the tests. In case where IREL requested to carry out inspection when in fact the equipment is not ready for testing.
- 10.3. Where the Agreement provides and IREL so desires for tests on the site, IREL except where otherwise specified, shall provide free of charge, such labour, materials, electricity, fuel, as may be required and as may be reasonably demanded to carry out such tests efficiently.
- 10.4. The satisfactory completion of these tests shall not bind IREL to accept the De-sliming system should it on further tests after erection be found not to comply with the Agreement.
- 10.5. If after inspection, examining of De-sliming system IREL shall decide that system or any part thereof is defective or not in accordance with the Agreement, it may reject the De-sliming system or part thereof giving the Agency within a reasonable time notice of such rejection, stating therein the grounds upon which the said decision was based.
- 10.6. If at any time before the Works are taken over, IREL shall:
 - a) Decide that any work done or equipment supplied or materials used by the Agency or any sub Agency is or are defective or not in accordance with the Agreement or that the Works or any portion thereof are defective or do not fulfill the requirements of the Agreement.
 - b) As soon as reasonably practicable, notify to the Agency of the said decision specifying particulars of the defects alleged and of where the same are alleged to exist or to have occurred and,
 - c) So far as may be necessary place the plant of the Agency's disposal, then, the Agency shall within a reasonable time at his own expense and with all speed make good the defects so specified.

Article 11 Trial Run

- 11.1. On completion of erection of the De-sliming system by the Agency, trial runs for individual equipment / units shall be conducted by the Agency to prove that the De-sliming system have been supplied and erected as per Agreement and after erection, De-sliming system is fit for start-up and Commissioning.
 - 11.1.1. Trial runs shall be so designed to conduct the systematic check of the components and of the functional operation thereof. Trial runs shall comprise idle, no-load and part-load trial runs, as applicable. Feed material required for the purpose will be provided by IREL. Environmental friendly, bio-degradable Flocculant and other consumables shall be arranged by the Agency.
 - 11.1.2. Trial runs shall be conducted by the Agency under its sole responsibility and employing its own personnel. IREL's supervisory personnel and skilled operating personnel shall, however, witness the trial runs.
- 11.2. On successful completion of trial runs and rectification of the Defects and / or deficiencies, indicated / listed by IREL to the Agency during trial runs, the Agency shall so notify IREL for conducting integrated trial runs of De-sliming system.
- 11.3. On receipt of the notice from the Agency for conducting integrated trial runs, IREL, shall deploy the necessary operating personnel, and provide raw materials and utilities.
- 11.4. As soon as all works in respect of trial runs are completed and IREL is satisfied that the defects and / or deficiencies, indicated by IREL to the Agency have been rectified, the Agency shall notify to IREL that De-sliming system is fit for Commissioning and performance test.

Article 12 Commissioning and Performance Test

- 12.1. After completion of trial run, the Agency shall commission the De-sliming system in accordance with provisions and terms of this Agreement.
- 12.2. IREL shall provide the operating personnel, all raw materials and utilities required for Commissioning. The Agency shall provide maintenance personal and supply the commissioning spares and consumables etc. required for Commissioning.
- 12.3. The Agency shall conduct Performance Guarantee Test as specified in Terms of Reference in Annexure-III of this Agreement. On completion of integration of the de-sliming system with HUS, Selected Bidder shall demonstrate the performance of de-sliming system at a throughput of 180-220 tph in HUS, through meeting the following process deliverables
 - a. Free slime content in HUS concentrate should be less than 0.2%
 - b. Free slime content in HUS Tails should be less than 1.0%
 - c. Recycled process water from thickener/filter press shall be clear with less than 100ppm of Slime particles
 - d. The filter cake generated shall have moisture content of 30% maximum
- 12.4. The Commissioning Certificate shall be issued by the IREL subject to the following:
 - 12.4.1. Performance Guarantee Test has been successfully completed and parameters are as per Terms of Reference in Annexure-III.
 - 12.4.2. The Agency to the satisfaction of IREL, has met all the objections/ observations, if any.
 - 12.4.3. In case the Performance Guarantee Tests has been completed as per the alternate flowsheet (developed by Agency after test work), the Agency has to provide hand-holding support and provide training to the operators for a minimum period of 3 months after issuance of FAC. The cost towards the above is to be subsumed in the overall price quoted by Selected Bidder and shall be deemed to be included in LS Price.

Article 13 Final Acceptance

13.1. Final Acceptance shall occur in respect of the Works when:

13.1.1. the Performance Guarantee Tests have been successfully completed.

13.1.2. the Agency has submitted all final drawings & documents including SOPs for the respective Works in accordance with the provisions of this Agreement as given in Terms of Reference in Annexure-III.

13.1.3. the Agency has fulfilled all the obligations under the Agreement.

13.1.4. the Agency has fulfilled successful completion of 3 months Operation and maintenance assistance as per TOR

13.2. At any time after the events set out in Clause 13.1 hereof, have occurred, the Agency may notify to IREL requesting for the issue of Final Acceptance Certificate (FAC) for Works.

13.3. IREL shall, within seven (7) days after receipt of the Agency's notice, issue a FAC.

13.4. Payment for 'commissioning and PG test' and Retention Money, after adjustment of applicable Liquidated Damages, may be released by IREL against submission of Performance Bank Guarantee (by the Agency) equal to 10% of the Agreement Value valid for 12 months from the date of issue of FAC.

Article 14 Ownership of Materials and Products

- 14.1. Notwithstanding anything in this Agreement, IREL shall have absolute rights of the input Materials & output Products at all times and shall have ownership and title over the De-sliming system and the Works in progress. However, the risk and liability of the De-sliming system including all its components like equipment, material, structure, associated facilities and resources shall lie with the Agency till until completion of the Performance Guarantee Test as per the satisfaction of IREL. After completion of Performance Guarantee Test, the risk and liability of the De-sliming system including machinery, equipment, structures, tools & tackles, spares, manuals, drawings and any other components shall be transferred by the Agency to IREL in accordance with the terms and conditions of this Agreement.
- 14.2. Notwithstanding anything in this Clause, the Agency shall at all times be responsible for monitoring the safety and security of its manpower, equipment, tools & tackles etc. being used for completion of Works.

Article 15 Declaration of the Agency

- 15.1. The Agency acknowledges that prior to the execution of this Agreement, the Agency has after a complete and careful examination made an independent evaluation of the Site conditions and all the information provided by IREL and has determined to the Agency's satisfaction the nature and extent of such difficulties, risks and hazards as are likely to arise or may be faced by the Agency in the course of performance of its obligations hereunder. The Agency shall not be entitled for any compensation, or extension in time, whatsoever on account of its failure to make such examination and evaluation;
- 15.2. The Agency does not, and shall not, at any time, claim ownership of the land and/or space provided for the purpose of installation of the De-sliming system. The Agency is undertaking the Works for and on behalf of IREL.

Article 16 Obligations of the Agency

16.1. Scope of Work

16.1.1. Under this Agreement, the Agency shall fulfill scope of work (the **"Scope of Work"**) defined in the Terms of Reference attached in Annexure-III.

16.2. Construction of temporary stores and site office

16.2.1. Suitable areas will be allocated by IREL to the Agency to build, at his expense, temporary stores for storing his equipment, materials, etc. and also to build his temporary site office. The Agency will be solely responsible for watching and guarding of his stores office, materials, equipment etc.

16.2.2. The Agency shall cover all his equipment and materials at site with requisite insurance against theft, fire, tempest, flood, earthquake, etc.

16.3. Accommodation

16.3.1. IREL shall not be in a position to offer any lodging/ boarding facilities for Agency's personnel /men and it shall be the responsibility of the Agency to make his own arrangements in this respect. No permanent accommodation facilities shall be constructed by the Agency at the Site.

16.3.2. No personnel/ men of Agency shall be allowed to stay during night time at Site, until unless so is desired for completion of Works or for security purpose. Only temporary structural shelters shall be constructed by Agency at Site for stay during shift time break. All such temporary constructions as well as stay of Agency's personnel/ men at Site during night shall be with due approval of IREL.

16.4. Co-ordination with other Agencies

16.4.1. The Agency shall execute his work so as not to obstruct or retard the work being executed simultaneously by other agencies. This aspect shall also be considered while quoting for the Works.

16.5. Cleaning the site

16.5.1. The Agency shall clean all required debris etc. at the site prior to the commencement of work at no extra cost.

16.5.2. On completion of Works the site shall be cleared of all men, materials and equipment belonging to the Agency. The Agency shall remove with IREL's approval all his temporary arrangements for storage and distribution of construction water, all electrical installations together with wiring or construction power, site offices and all other temporary works and shall reinstate and make good any work disturbed by the temporary work to the satisfaction of IREL. The site and surroundings shall be handed over in a clean and neat condition as required by IREL.

16.6. The Agency shall ensure that installation and Commissioning on the land/ space provided by IREL, within a stipulated period of fifteen (15) months from the Effective

Date of the Agreement, subject to the terms mentioned in Clause 16.11 & Article 16 herein below;

- 16.7. The de-sliming system is to be located suitably on the land/ space provided by IREL. The Agency shall finalize the De-sliming system layout keeping in view the optimum utilization of existing infrastructure and topography of the area;
- 16.8. All the activities related to the Works of this Agreement shall be under periodical inspection of the representatives of IREL;
- 16.9. The employees of the Agency, including any assignees, entrusted with the job of installation and Commissioning upto the stabilisation of the De-sliming system shall be required to follow, but not limited to, the Industrial Safety & Health Rules issued by Ministry of Labour & Employment, GoI;
- 16.10. While undertaking Works for the de-sliming system, the Agency shall take all necessary precautions against any untoward incident, inside the Site beside the area, earmarked for installation of the De-sliming system, and shall indemnify IREL for any accident, loss or damage to the property of IREL or any third party due to negligence of the Agency and /or its representatives;
- 16.11. The Agency shall adhere to the Implementation Plan as submitted as part of the Conditions Precedent for successful Commissioning of the Plant, and the Agency shall ensure no delay in Commissioning the de-sliming system due to any reason whatsoever, other than Force Majeure and subject to IREL fulfilling its obligations under this Agreement;
- 16.12. For any delay in Commissioning of the De-sliming system, the Agency shall compensate IREL for the loss suffered by IREL (Liquidated Damages) as mentioned in Clause 20.1 of this Agreement;
- 16.13. The Agency shall not be the owner of the aforesaid civil structures, building, equipment and land during the Agreement period;
- 16.14. The Agency shall ensure all the statutory provisions of State Government, Central Government and local authorities including labour laws and industrial laws for installation of the De-sliming system / engagement of labours are followed, and in no case, the employees / workers engaged by the Agency directly or indirectly, shall be the employee of IREL. Any violation of any of the provisions by the Agency and / or its representatives, the same shall be indemnified by them to IREL, against any claim / demand made by any authority;
- 16.15. The Agency shall take all necessary steps for obtaining Certificate under the provisions of the Agreement, Labour (Regulation & Abolition) Act, 1970 and the rules made there-under for engaging any contractor and contract labours and comply with all provisions of the said act and the rules;
- 16.16. The Agency shall have strict compliance of all Safety provisions / norms at Site as per details given in Terms of Reference in Annexure-III.

16.17. The Agency shall ensure all the environmental norms and regulation under the relevant authorities are followed.

16.18. Supply of O & M spares

16.18.1. The Agency shall Supply essential O&M spares required for continuous operation of the equipment for one year, before commencing the commissioning of the project, as per the detailed billing schedule in Annexure-VII. Spares shall be supplied for all items found essential

Article 17 Obligations of IREL

17.1. Unless otherwise specified in the Agreement, IREL shall :

- a. provide the Agency and its Personnel with work permits and such other documents as may be necessary to enable the Agency, or its Personnel to perform the services;
- b. provide construction water and power at a single point each for Site Works, at the boundary of Battery Limit

17.2. Integration of de-sliming system.

- a. IREL shall arrange for stoppage of HUS to integrate the equipment/ project based on the request of the Agency.
- b. For the purpose of integration and commissioning, maximum of 14 days stoppage of HUS shall be available to the Agency.

17.3. Access to land and property

- 17.3.1. IREL warrants that the Agency shall have, free of charge, unimpeded access to the Site of the Project in respect of which access is required for the performance of Works;

17.4. Payment

- 17.4.1. In consideration of the Works performed by the Agency under this Agreement, IREL shall make to the Agency such undisputed payments and in such manner as is provided in Article 18 of this Agreement.



Article 18 Payments to the Agency

18.1. Agreement Value

18.1.1. IREL shall pay the following amount for executing the Works to the Agency:

Price Schedule

Sl. No.	Particulars	Unit	Value in INR
1	Fees for validation of flow sheet, Design & Engineering, Supply & erection of Equipment as per billing schedule, installation & commissioning, performance test, operation & maintenance assistance and final acceptance of de-sliming system with supply of O & M spares <i>NB: The bidder has to submit a list of O & M spares of equipment with quantity & rate along with bid document.</i>	LS	
2	GST		
3	Total Price		

18.1.2. The Agreement Value is the basic amount, which is total of fees for validation, Design & Engineering, supply & erection of equipment as per billing schedule, installation & commissioning, performance test, supply of O & M spares, operation & maintenance assistance and final acceptance of de-sliming system, as mentioned above.

18.1.3. The payments under this Agreement shall not exceed the Agreement Value specified herein (the "**Agreement Value**"). The Parties agree that the Agreement Value is Rs..... (Rupees).



18.2. Time Schedule

18.2.1. The De-sliming system will be commissioned within 12 months from the Effective Date and followed by 3 months of operation and maintenance assistance. The overall time schedule for completion of the Works is given below:

S. No.	Items of Work	Commencement (No. of days from Effective Date)	Completion (No. of days from Effective Date)
1	Engineering	0	As per time schedule submitted by Agency
2	Supply / Delivery of:		
i)	Building steel structures & sheeting	As per time schedule submitted by Agency	As per time schedule submitted by Agency
ii)	Mechanical equipment including technological structures	As per time schedule submitted by Agency	As per time schedule submitted by Agency
iii)	Electrical equipment	As per time schedule submitted by Agency	As per time schedule submitted by Agency
5.	Erection of building steel structures	As per time schedule submitted by Agency	As per time schedule submitted by Agency
6.	Civil Work	As per time schedule submitted by Agency	As per time schedule submitted by Agency
7.	Erection		
i)	Mechanical equipment	As per time schedule submitted by Agency	As per time schedule submitted by Agency
ii)	Electrical equipment	As per time schedule submitted by Agency	As per time schedule submitted by Agency
iii)	Instrumentation and Automation	As per time schedule submitted by Agency	As per time schedule submitted by Agency
8.	Trial Run	As per time schedule submitted by Agency	As per time schedule submitted by Agency
9.	Supply of O & M spares	As per time schedule submitted by Agency	As per time schedule submitted by Agency
10.	Commissioning	As per time schedule submitted by Agency	As per time schedule submitted by Agency
11.	Operation and Maintenance Assistance	As per time schedule submitted by Agency	As per time schedule submitted by Agency



- 18.3. The master network (L-3 level schedule) showing the sequence of engineering, supply, transportation, assembly, installation, trial run and commissioning is attached at Annexure-VI to this Agreement.
- 18.4. The detailed Billing Schedule (consisting item wise break-up of Engineering document, supply of equipment, civil & structural work at site, erection, installation & commissioning, PG Test, O&M Spares, operation & maintenance assistance) to be adopted for raising invoices against the Agreement Value by the Agency is attached at Annexure-VII to this Agreement.
- 18.5. The Payment to Agency for completion of Works will be in accordance to the Article 19

Article 19 Billing and Payment

- 19.1. The Agency shall raise an invoice for each of the Project Milestone completed as per master network and in accordance with Billing Schedule, and shall submit the same to IREL in accordance with Clause mentioned below;
- 19.2. Each bill/ invoice shall state the amount billed and be accompanied with progress report for each milestone and any other supporting documents as required and finalised with IREL.
- 19.3. The Agency shall reimburse IREL all costs, charges, damages or expenses which IREL may have paid or incurred, if and to the extent to which the Agency is liable under this Agreement to pay upon written request of the Engineer-in-Charge, failing which such costs, charges, damages or expenses shall be deducted by IREL from any money due or becoming due by IREL to the Agency under this Agreement or any other Agreement failing which such amounts shall be considered as debt from the Agency to IREL and shall be recoverable accordingly.
- 19.4. Agency shall validate the given flow sheet and if modification is required, it will be tested as per tender and same needs to be approved by IREL. **Payment of 5% of total Price Schedule will be released for finalizing flow sheet after the same is accepted and approved by IREL.**
- 19.5. Payment of **five percent (5%) of Price Schedule shall be released on submission of detail design & engineering data** (*to be finalized during technical discussion*) for the facility of the De-sliming system, and accepted by IREL.
- 19.6. Payment of **sixty percent (60%) of Price Schedule shall be released towards progressive payments for Supply of Plant & Equipment and building steel.** Invoicing for progress payments will be made in RA Bills with minimum value of each bill to be INR 2 Crore or as per the billing schedule to be submitted by the Successful Bidder against milestones to be mutually discussed and approved by IREL
- 19.7. Payment **of ten percent (10%) of Price Schedule shall be released upon completion of Erection of Plant & Equipment and building Steel structures.**
- 19.8. Payment of **fifteen percent (15%) of Price Schedule shall be released upon completion of Commissioning & PG Test and supply of O & M spares.**
- 19.9. Payment of **five percent (5%) of Price Schedule shall be released upon issue of the Final Acceptance Certificate.**
- 19.10. Ninety percent (90%) of the payment, towards each invoice raised, and 100% of payment of taxes and duties on submission of documentary evidence, shall be made by IREL within thirty (30) days after verification of the documents submitted by the Agency and by conducting physical inspection of the site as mentioned in the documents submitted with the invoice.
- 19.11. Liquidated Damages to be deducted shall be adjusted in the current invoice or next following invoice raised, as may be applicable;

- 19.12. All interim payments as per Clause 19.6 shall be regarded as progress payments against the final payment only and not as payment for Works completed and shall not preclude defective / imperfect / incomplete facilities to be removed. It will not be considered as an admission by IREL of the due performance of the Agreement, or any part thereof by the Agency nor shall it preclude, determine or affect in any way the powers of IREL under these conditions or in any way vary or affect the Agreement
- 19.13. The remaining ten percent (10%) payment for each Project Milestone (the "Retention Money") shall be made after issuance of "Final Acceptance Certificate" by IREL and submission of Performance Bank Guarantee, as per the format attached in Annexure-II by the Agency in accordance with the terms and conditions mentioned in this Agreement;

Article 20 Liquidated Damages

20.1. In case of delay in achieving Works Completion Date, Liquidated Damages as mentioned below shall be applicable.

20.2. Liquidated Damages (LD) against delay in achieving Works Completion Date.

20.2.1. Liquidated Damages (LD) shall be levied where reasons are attributable to Agency for delays in execution of this Agreement. LD shall be levied @0.5% per week or part thereof on the Agreement Value for each week of delay in achieving Works Completion Date as per Clause 1.44; subject to a maximum of 10% of the total Agreement Value.

Article 21 Representations and Warranties

21.1. IREL's Representations and Warranties

- 21.1.1. It is duly organised and validly existing entity under the laws of India and has all requisite legal right, power and authority to execute and deliver this Agreement and all the agreements to which it is a Party and to carry out the terms, conditions and provisions hereof and thereof;
- 21.1.2. The execution, delivery and performance by it of this Agreement and all of the agreements and documents referred to herein to which it is the party have been duly authorised by all requisite corporate action, and shall not contravene any provisions of, or constitute a default under, any other agreement or instrument to which it is the party. The execution, delivery and performance by it of this Agreement and all of the agreements and documents referred to herein to which IREL is the party does not constitute a violation of any statute, judgement, order, decree or regulation or rule of any court, government authority or arbitrator of competent jurisdiction applicable or relating to IREL, its assets or its business; and
- 21.1.3. This Agreement constitutes its valid, legal and binding obligation, enforceable in accordance with the terms hereof except that the enforceability thereof may be limited by applicable bankruptcy, insolvency, re-organisation, moratorium or other similar law affecting creditor's rights generally and except to the extent that the remedies of specific performance, injunctive relief and other forms of equitable relief are subject to equitable defenses, the discretion of the court before which any proceeding thereof may be brought and the principles of equity in general.

21.2. Agency's Representations and Warranties

The Agency represents and warrants as to itself that:

- 21.2.1. It is duly organised and validly existing entity under the laws of India. It has complied with the requirements of all Applicable Law and all requisite legal right, power and authority to execute and deliver this Agreement and all the agreements and documents referred to herein to which it is the party and to carry out the terms, conditions and provisions hereof and thereof,
- 21.2.2. The execution delivery and performance by it of this Agreement and all of the agreements and documents referred to herein to which it is the party have been duly authorised by all requisite corporate action, and shall not contravene any provisions of, or constitute a default under, any other agreement or instrument to which it is the party. The execution, delivery and performance by it of this Agreement and all of the agreements and documents referred to herein to which the Agency is the party does not constitute a violation:-

- a. of any statute, judgment order, decree or regulation or rule of any court, government authority or arbitrator of competent jurisdiction applicable or relating to the Agency, its assets or its business; or
 - b. the Agency articles, constituting documents or any indenture, agreement or agreement to which it is the party or by which it or its property is bound.
- 21.2.3. This Agreement constitutes its valid, legal and binding obligation, enforceable in accordance with the terms hereof except that the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganisation, moratorium or other similar law affecting creditor's rights generally and except to the extent that the remedies of specific performance, injunctive relief and other forms of equitable relief are subject to equitable defences, the discretion of the court before which any proceeding thereof may be brought and the principles of equity in general;
- 21.2.4. There are no attachments or warrants served on it, in respect of GST, income tax, central government revenues or any other state government of India revenues, any other taxes and dues, that might materially adversely affect its ability to meet and carry out its obligations under this Agreement;
- 21.2.5. There are no actions, suits of proceeding pending or, to its knowledge threatened against or affecting the Agency or its employee, before any court or administrative body or arbitral tribunal that might materially adversely affect its ability to meet and carry out its obligations under this Agreement;
- 21.2.6. It is not in default under any agreement to which it is the party or by which it or its property may be bound, nor in any material default of any obligation under this Agreement and all of the agreements and documents referred to herein to which it is the party.

Article 22 Liability

- 22.1. The Agency's liability under this Agreement shall be determined by the Applicable Laws and the provisions hereof.
- 22.2. The Agency shall, subject to the limitation specified in Clause 22.3, be liable to IREL for any direct loss or damage accrued or likely to accrue due to deficiency in Services rendered by it.
- 22.3. The Parties hereto agree that in case of negligence or willful misconduct on the part of the Agency or on the part of any person or firm acting on behalf of the Agency in carrying out the Work, the Agency, with respect to damage caused to IREL's property, shall not be liable to IREL:
 - 22.3.1. for any indirect or consequential loss or damage; and
 - 22.3.2. for any direct loss or damage that exceeds (a) the Agreement Value set forth in Sub-clause 18.1.2 of this Agreement, or (b) the proceeds the Agency may be entitled to receive from any insurance maintained by the Agency to cover such a liability in accordance with Clause 25, whichever of (a) or (b) is higher.
- 22.4. This limitation of liability specified in Clause 22.3 shall not affect the Agency's liability, if any, for damage to Third Parties caused by the Agency or any person or firm acting on behalf of the Agency in carrying out the Work subject, however, to a limit equal to the Agreement Value.

Article 23 Warranty and Defects Liability

23.1. Defects Liability Period

23.1.1. The Agency shall be responsible for all the Defects and deficiencies, except usual wear and tear in the Project or any Section thereof, till the expiry of a period of 1 (one) year commencing from the date of issue of Final Acceptance Certificate(the "Defects Liability Period").

23.2. Remedy and rectification of Defects and deficiencies

23.2.1. Without prejudice to the provisions of Clause 23.1.1, the Agency shall repair or rectify all Defects and deficiencies observed by IREL during the Defects Liability Period within a period of 15 (fifteen) days from the date of notice issued by IREL in this behalf, or within such reasonable period as may be determined by IREL at the request of the Agency, in accordance with Good Industry Practice.

23.3. Cost of remedying Defects

23.3.1. For the avoidance of doubt, any repair or rectification undertaken in accordance with the provisions of Clause 23.2, including any additional tests, shall be carried out by the Agency at its own risk and cost

23.4. Agency's failure to rectify Defects

23.4.1. In the event that the Agency fails to repair or rectify such Defect or deficiency within the period specified in Clause 23.2, IREL shall be entitled to encash the Performance Bank Guarantee.

Article 24 Indemnity

- 24.1. The Agency ("**Indemnifying Party**") shall indemnify IREL ("**Indemnified Party**") against any claim or damage, demand and any other expenses incurred by IREL for defending such claims / demand made by any authority due to the commission, omission and negligence on the part of the Agency in complying with any of the statutory provisions, being the owner of the De-sliming system;
- 24.2. Without prejudice to the generality of Clause 24.1, the Indemnifying Party shall indemnify, and keep the Indemnified Party indemnified against any claim, damages, compensation proceeding, suit and any award rendered in any such suit or proceeding where such claim, proceeding, suit arises out of or in relation to:
- 24.2.1. Violation or breach of any Applicable Law as may be applicable to the Agreement which may arise out of or in consequence of the construction or maintenance or performance of the Works under the Agreement;
 - 24.2.2. Breach of any conditions imposed by all and any Government Approvals in relation to the Works or any part thereof;
 - 24.2.3. Infringement of any domestic or foreign patent rights, copyrights or other Intellectual Property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Agency or by the Sub-contractors in performing the Agency's obligations or in any way incorporated in or related to the Project;
 - 24.2.4. Any accident or injury caused to any Third Party, any employee of the Indemnified Party, where such accident or injury is directly or indirectly attributable to any act, omission or negligence on the part of the Indemnifying Party, its agents, representatives or employees.
 - 24.2.5. Any damage or loss of any property, real or personal, to the extent that such damage or loss arises out of or in the course of or by reason of the execution and completion of the Works and the remedying of any defects by the Agency.
 - 24.2.6. Any breach of the representations and warranties provided herein.
 - 24.2.7. Any sum payable by IREL to Agency for any breach of the Agreement, or otherwise which is directly or indirectly attributable to the acts and /or omission of the Agency, its agents, representatives or employees under this Agreement.
 - 24.2.8. The Agency shall indemnify IREL and keep IREL indemnified to the extent of the value of free issue materials, if applicable, to be issued till such time the entire Agreement is executed and proper account for the free issue materials is rendered. The Agency shall not utilize IREL's free issue materials for any job other than the one contracted out in this Agreement and also not indulge in any act, commission or negligence which shall cause/result in any loss/damage to IREL and in which case, the Agency shall be liable to IREL to pay compensation to the full extent of damage/loss and undertakes to pay the same.

Article 25 Insurance

- 25.1. The Agency, at its sole cost and expense, shall continue to obtain and maintain all the construction insurance policies and operational insurance policies required to be taken in respect of the De-sliming system or as may be necessary in accordance with the Prudent Operating Practices. The Agency shall ensure that IREL is named as an additional insured on all insurance policies with respect to third party liability insurance. Any failure by the Agency to obtain the insurance coverage or certificates of insurance as required, shall neither relieve the Agency of the insurance requirements set forth herein nor relieve or limit in any way the Agency's obligations and liabilities under any other provision of this Agreement;
- 25.2. The under mentioned minimum coverage or such additional coverage as may reasonably be required, shall be maintained or caused to be maintained by the Agency throughout the Agreement period:
- Transit Insurance
 - Workers Compensation and Employers General Liability Insurance
 - Builders All Risk Insurance
 - All Risk Property/Comprehensive Machinery Insurance (Upon Completion of Construction)
 - Third party Liability Insurance
- 25.3. To the extent that the above insurance policies are available through Indian insurance companies, preference shall be given to using these companies.
- 25.4. Notwithstanding any liability that may arise under this Agreement, any loss for which compensation is due to the Agency under this Clause, shall not be charged to IREL.
- 25.5. The Agency shall cause its insurers or agents to provide IREL with certificates of insurance for required replacement policies or renewals evidencing the endorsements of policies, at least thirty (30) days prior to either termination or expiration of any policy hereunder.

Article 26 Force Majeure

- 26.1. **"Force Majeure"** is an event beyond the control of Agency and not involving the Agency's fault or negligence and which is not foreseeable. Such events may include, but are not restricted to acts of IREL/Agency either in its sovereign or contractual capacity, wars or revolution, hostility, acts of public enemy, civil commotion, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts and freight embargoes or any other event which IREL may deem fit to consider so. The decision about Force Majeure shall rest with IREL that shall be final and binding. Force Majeure clause has to be compulsorily embedded in the order;
- 26.2. If there is delay in performance or other failures by the Agency to perform obligations under this Agreement due to event of a Force Majeure, the Agency shall not be held responsible for such delays/failures;
- 26.3. If a Force Majeure situation arises, the Agency shall promptly notify IREL in writing of such conditions and the cause thereof within fifteen (15) days of occurrence of such event. Unless otherwise directed by IREL in writing, the Agency shall continue to perform its obligations under the Agreement as far as reasonable/practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event;
- 26.4. If the performance in whole or in part or any obligation under this Agreement is prevented or delayed by any reason of Force Majeure for a period of exceeding sixty (60) days, IREL may at its option terminate the Agreement, without any financial repercussion on either side;
- 26.5. Any delay or non-performance by either Party hereto caused by the occurrence of any event of Force Majeure shall not:
- 26.5.1. constitute a default or breach of the Agreement;
 - 26.5.2. give rise to any claim for damages or additional cost or expense occasioned thereby;
- If and to the extent that such delay or non-performance is caused by the occurrence of an event of Force Majeure.

Article 27 Breach of Terms, Suspension and Termination

27.1. Breach of Terms

- 27.1.1. Should either Party here-to commit breach of any of the terms of this Agreement and in any such case the other Party, shall be entitled, without incurring any liability what-so-ever, to fore-bear from doing such acts or fulfilling such obligations as are to be done or fulfilled by it here under until the Party committing breach on terms herein makes good the said breach;

27.2. Suspension

- 27.2.1. IREL may suspend the Works in whole or in part at any time by giving the Agency a notice in writing, if the Agency shall be in breach of this Agreement or shall fail to perform any of its obligations under this Agreement, including the carrying out of the Works; provided that such notice of suspension (i) shall specify the nature of the breach or failure, and (ii) shall provide an opportunity to the Agency to remedy such breach or failure within a period not exceeding 30 (thirty) days after receipt by the Agency of such notice of suspension.
- 27.2.2. On receiving the notice of suspension from IREL, the Agency shall stop all such work, which IREL has directed to be suspended with immediate effect. IREL may at any time cancel the suspension notice for all or any part of suspended work by giving written notice to the Agency specifying the part of work to be resumed and the effective date of suspension withdrawal. The Agency shall resume the suspended work as expeditiously as possible after receipt of such withdrawal of suspension notice. In the event of suspension of work, IREL shall not be liable to the Agency for any damage and loss.

27.3. Temporary Suspension:

- 27.3.1. IREL may at any time temporarily hold the progress of work being performed under the Agreement or any part thereof by notice in writing to the Agency. All the work so held shall be resumed by the Agency and extended suitably for the period amounting to temporary suspension based on a schedule as directed by IREL and mutually agreed upon between the Agency and IREL.
- 27.3.2. IREL will not pay the Agency for any work, which is performed during such an interval of suspension, and IREL shall not be liable to the Agency for any damages or loss caused by such suspension of work.

27.4. Event of Default

Event of Default means the Agency Event of Default or IREL Event of Default or both as the context may admit or require.

- 27.4.1. Agency Event of Default

Any of the following events shall constitute an event of default by the Agency ("**Agency Event of Default**") unless such event has occurred as a result of IREL Event of Default or a Force Majeure event;

- a. the Agency fails to remedy any breach hereof or any failure in the performance of its obligations hereunder, as specified in a notice of suspension pursuant to Sub-clause 27.2.1hereinabove, within 30 (thirty) days of receipt of such notice of suspension or within such further period as IREL may have subsequently granted in writing
 - b. The Agency fails to commence the Works within thirty (30) days from the Effective Date;
 - c. The Agency fails to ensure that Works Completion Date of the De-sliming system is achieved within fifteen (15) months of the Effective Date;
 - d. Any representation made or warranties given by the Agency under this Agreement is found to be false or misleading;
 - e. The transfer, pursuant to law of either (a) the rights and/or obligations of the Agency under the Agreement, or (b) all or material part of the Agency; except where such transfer in the reasonable opinion of IREL does not affect the ability of the Agency to perform, and the Agency has the financial and technical capability to perform, its material obligations under the Agreement;
 - f. The Agency suspends or abandons the Works without prior consent of IREL, provided that the Agency shall be deemed not to have suspended/ abandoned operation if such suspension/ abandonment was (i) as a result of Force Majeure Event and is only for the period such Force Majeure is continuing, or (ii) is on account of a breach of its obligations under this Agreement by IREL;
 - g. the Agency becomes insolvent or bankrupt or enters into any agreement with its creditors for relief of debt or take advantage of any law for the benefit of debtors or goes into liquidation or receivership whether compulsory or voluntary;
 - h. the Agency fails to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause 27.2 hereof;
 - i. the Agency submits to IREL a statement which has a material effect on the rights, obligations or interests of IREL and which the Agency knows to be false;
 - j. any document, information, data or statement submitted by the Agency in its Bid, based on which the Agency was considered eligible or successful, is found to be false, incorrect or misleading; or
 - k. The Agency repudiates this Agreement or otherwise evidences an intention not to be bound by this Agreement.
- 27.4.2. IREL Event of Default

The following events shall constitute events of default by IREL ("**IREL Event of Default**"), unless any such IREL Event of Default has occurred as a result of Agency Event of Default or due to a Force Majeure Event:

- a. IREL is in breach of this Agreement and has failed to cure such breach within sixty (60) days of receipt of notice in that behalf from the Agency;
- b. IREL repudiates this Agreement or otherwise evidences an intention not to be bound by this Agreement;
- c. Any representation made or warranties given by IREL under this Agreement is found to be false or misleading.

27.5. Recourse to Event of Default

27.5.1. In case of an event of default, the following recourse is available to IREL and the Agency or both as the situation may warrant:

- a. In case of occurrence of Event of Default mentioned in Sub-clause 27.4.1.b and Sub-clause 27.4.1.c, the Agency shall have an option to ask for extension from IREL specifying the conditions that have restricted the Agency to complete the tasks in stipulated time. However, IREL's decision on said matter shall stand final as the case may be;
- b. In case of occurrence of Event of Default mentioned in Sub-clause 27.4.1.a, Sub-clause 27.4.1.d, Sub-clause 27.4.1.e, Sub-clause 27.4.1.f, Sub-clause 27.4.1.g, Sub-clause 27.4.1.h, Sub-clause 27.4.1.i, Sub-clause 27.4.1.j and Sub-clause 27.4.1.k IREL shall have the option to seek Termination of Agreement. The Termination shall be governed by Clause 27.6 of this Agreement
- c. In case of occurrence of Event of Default mentioned in Sub-clause 27.4.2, the Agency shall have an option to seek Termination of this Agreement. In seeking the Termination of the Agreement, Agency would have to clearly demonstrate that the Event of Default has occurred despite all possible steps taken by Agency to avoid Termination. The Parties shall mutually decide the modalities of Termination.

27.6. Termination due to Agency Event of Default

27.6.1. Without prejudice to any other right or remedy which IREL may have in respect thereof under this Agreement, upon the occurrence of an Agency Event of Default, IREL shall be entitled to terminate this Agreement by issuing a Termination Notice (the "**Termination Notice**") to the Agency, provided that before issuing the Termination Notice, IREL shall by a notice in writing inform the Agency of its intention to issue the Termination Notice (the "**Preliminary Notice**"). In case the underlying breach/default is not resolved within a period of sixty (60) days from the date of the Preliminary Notice, IREL shall be entitled, to terminate this Agreement by issuing the Termination Notice. Provided further, that IREL shall be entitled to forfeit the Security Deposit;

- 27.6.2. Upon termination of this Agreement by notice of either Party to the other pursuant to Sub-clauses 27.5.1.b or 27.5.1.c hereof, the Agency shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Works to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum.

27.7. Payment upon Termination

- 27.7.1. Upon termination of this Agreement pursuant to Sub-clauses 27.5.1.c hereof, IREL shall make the following payments to the Agency (after offsetting against these payments any amount that may be due from the Agency to IREL):
- a. remuneration pursuant to Article 18Article 1 hereof for Works satisfactorily performed prior to the date of termination;

27.8. Disputes about Events of Termination`

- 27.8.1. If either Party disputes whether an event specified in Sub-clause 27.4.1 or in Sub-clause 27.4.2 hereof has occurred, such Party may, within 30 (thirty) days after receipt of notice of termination from the other Party, refer the matter to arbitration pursuant to Sub-clause 28.2 hereof, and this Agreement shall not be terminated on account of such event except in accordance with the terms of any resulting arbitral award.

Article 28 Resolution of Disputes

28.1. Conciliation

- 28.1.1. All disputes or difference whatsoever arising between the Parties out of or relating to the Agreement shall be settled through discussions between the Chairman & Managing Director of IREL and the Authorised signatory of the Agency (the "**Conciliation**"). In case an amicable settlement is not arrived at, the matter shall be settled through Arbitration by appointment of sole arbitrator as approved by CMD, IREL.
- 28.1.2. Conciliation shall be resorted to prior to invoking Arbitration. The Arbitration clause is to be invoked by the Parties to the Agreement only on failure of Conciliation proceedings to amicably settle the disputes;

28.2. Arbitration

- 28.2.1. All disputes and differences of any kind what so ever arising out of or in connection with the Agreement or carrying out of the works (whether during the course of works or after their completion and whether before or after determination, abandonment or breach of Agreement) shall be referred to and settled by the person authorized and notified in writing by IREL who shall state his decision in writing. Such a decision may be in the form of a final certificate or otherwise, within a period of 30 days from the date of receipt of such reference to them.
- 28.2.2. If the Agency is dissatisfied with the decision of such authorized person, then he may within 30 days of receipt of such decision send a written appeal to IREL, represented by the Chairman and Managing Director at the registered office, Mumbai for Arbitration, in accordance with the provisions of the Arbitration and Conciliation Act and the Rules framed there under from time to time, and for the time being in force. Such written appeals should however specify only those matters in dispute, which have been referred to such authorized person but not satisfied with the decision and the reasons leading to his dissatisfaction.
- 28.2.3. If the period of 30 days has expired at any stage, stipulated in the preceding paras without any response from the Agency before such expiry, the Agency is deemed to have communicated his satisfaction to the decision of IREL at the relevant stage and all his rights of further appeal or as the case may be, adjudication are deemed to have been waived once and for all.
- 28.2.4. The seat of arbitration will be at IREL-MK unit, Manavalakurichi and only the appropriate Court coming under High Court of Chennai will have jurisdiction to entertain all matters of litigation to the exclusion of all other courts.
- 28.2.5. The Agency shall not in any way delay or default or cause to delay or default the carrying out of the works by reason of the fact that any matter has been agreed to be referred to and / or referred to Arbitration.

Article 29 Copyright and Intellectual Property rights

- 29.1. As between the Parties, the Agency shall retain the copyright and other Intellectual Property rights in the Agency's Documents and other design documents made by (or on behalf of) the Agency. The Agency shall be deemed (by signing this Agreement) to give to IREL a non-terminable transferable non-exclusive royalty-free license to copy, use and communicate the Agency's Documents, including making and using modifications of them. This license shall:
- 29.1.1. apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
 - 29.1.2. entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Agency's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
 - 29.1.3. in the case of Agency's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by this Agreement, including replacements of any computers supplied by the Agency:
- 29.2. The Agency's Documents and other design documents made by (or on behalf of) the Agency shall not, without the Agency's consent, be used, copied or communicated to a third party by (or on behalf of) IREL for purposes other than those permitted under this Article 29.
- 29.3. As between the Parties, IREL shall retain the copyright and other Intellectual Property rights in this Agreement and other documents made by (or on behalf of) IREL. The Agency may, at its cost, copy, use, and obtain communication of these documents for the purposes of this Agreement. They shall not, without IREL's consent, be copied, used or communicated to a third party by the IREL, except as necessary for the purposes of the Agreement.

Article 30 Governing Law

30.1. The execution interpretation, Construction and performance of this Agreement shall be governed by and constructed according to the Laws of India.

Article 31 Notices

- 31.1. All Notices or other communications which are required or permitted hereunder shall be in writing and shall be sufficient if delivered personally or sent by registered or certified mail, facsimile or certified courier to the address shown below.

In case to IREL:

.....
.....

Telephone No.:

Fax No.:

E-mail address:

In case to the Agency:

.....
.....

Telephone No.:

Fax No.:

E-mail address:

Article 32 General Provisions

- 32.1. The provisions made under this Agreement shall be applicable except where the context requires otherwise;
- 32.2. Disclosure of Information and Right of Inspection: The Parties shall furnish to each other all information reasonably requested in regard to the performances of their respective duties and obligations under this Agreement in such manner and form as the Parties may mutually determine from time to time;
- 32.3. Amendments and Supplements: All additions, supplements, amendments or variations to this Agreement shall be in writing and shall be signed by the duly authorized representatives of the Parties;
- 32.4. Entire Agreement: This Agreement including all Annexures hereto, represents the entire understanding between the Parties with respect to the subject matter hereof and supersedes any and all previous oral or written agreements or understanding between the Parties in respect of the Plant;
- 32.5. Assignments: The rights and obligations hereunder of each of the Parties hereto shall not be assigned to a Third Party without having obtained in writing the prior approval of the other Party;
- 32.6. Waivers:
- 32.6.1. No waiver by either Party of any default by the other in the performance of this Agreement (i) shall be effective unless recorded in a document duly executed by an authorised representative of such Party; (ii) shall operate or be construed as a waiver of any other or further default whether of a similar or different character;
- 32.6.2. The failure by either Party on any occasion to insist upon the performances of any of the terms, condition or provisions of this Agreement shall not constitute a waiver. The grant of additional time or order indulgence by one Party to the other, or acceptance of any variation in performance, shall not constitute a waiver.
- 32.7. Confidentiality:
- 32.7.1. The Agency, its and the Personnel of either of them shall not, either during the term or after the expiration or termination of this Agreement disclose any proprietary information, including information relating to reports, data, Drawings, design software or other material, whether written or oral, in electronic or magnetic format, and the contents thereof; and any reports, digests or summaries created or derived from any of the foregoing that is provided by IREL to the Agency, its and the Personnel; any information provided by or relating to IREL, its technology, technical processes, business affairs or finances or any information relating to IREL's employees, officers or other professionals or suppliers, customers, or contractors of IREL; and any other information which the Agency is under an obligation to keep confidential

in relation to the Project, the Works or this Agreement ("**Confidential Information**"), without the prior written consent of IREL.

Notwithstanding the aforesaid, the Agency, and its personnel of either of them may disclose Confidential Information to the extent that such Confidential Information:

- a. is required to be disclosed by Applicable Laws or judicial or administrative or arbitral process or by any governmental instrumentalities, provided that for any such disclosure, the Agency, its and the Personnel of either of them shall give IREL, prompt written notice, and use reasonable efforts to ensure that such disclosure is accorded confidential treatment; and
- b. is provided to the professional advisers, agents, auditors or representatives of the Agency or its personnel or either of them, as is reasonable under the circumstances; provided, however, that the Agency or personnel or either of them, as the case may be, shall require their professional advisers, agents, auditors or its representatives, to undertake in writing to keep such Confidential Information, confidential and shall use its best efforts to ensure compliance with such undertaking.

32.8. No Third Party Beneficiaries: This Agreement is intended solely for the benefit of the Parties. Nothing in this Agreement shall be construed to create any duty to, standard of care with respect to, any liability to, or any right of suit or action in, any Third Party.

32.9. Severability: The declaration, as void or unenforceable, of any provisions of this Agreement by any judicial authority or arbitration panel shall not ipso facto render the remaining provisions of the Agreement void or unenforceable.

32.10. Relationship of the Parties: This Agreement shall not constitute either Party as a partner, agent or legal representative of the other Party. Neither Party shall have any right or authority to assume, create or incur any liability or obligation of any kind, expressed or implied, against, in the name of or on behalf of the other Party except in accordance with this Agreement or as may otherwise be agreed in writing by the Parties.

32.11. Governing Language: The language that governs the interpretation of this Agreement is the English language. All Notices required to be given by either Party to the other and all other communications and documentation which are in any way relevant to this Agreement or which are relevant to the execution and implementation of this Agreement, including any dispute resolution proceedings, shall be in English language.

32.12. Counterparts: This Agreement may be executed in two counterparts, each of which when executed and delivered shall constitute an original, but both counterparts shall together constitute but one and the same instrument.

32.13. General Liability Provision: The rights and obligations of the Parties are finally and conclusively defined in this Agreement. Claims for indirect, remote or consequential damages such as loss of production, loss of profit, loss of use are excluded.

Article 33 Annexures

The following Annexures shall also form integral part of this Agreement.

- (i) Annexure I: Bank guarantee format for Security Deposit
- (ii) Annexure II: Bank Guarantee format for Performance Bank Guarantee
- (iii) Annexure III: RFP document, all addendums, corrigendum and clarifications issued by IREL and any other official communications
- (iv) Annexure IV: Techno-Commercial offer and other documents/ details/ data submitted by Agency at RFP stage
- (v) Annexure V: Letter of Intent (LOI) issued by IREL to the Agency
- (vi) Annexure VI: L3 Level Implementation Schedule
- (vii) Annexure VII: Detailed Billing Schedule
- (viii) Annexure VII: Instructions to Contractor for Statutory Compliances for Job / Work / Labour Contract

IN WITNESS HEREOF, the Parties hereto have executed this Agreement in two originals by putting the signature of their respective duly authorised representatives effective as of the day, month and year first written above.

For and on behalf of Agency

For and on behalf of IREL

Signature.....

Signature.....

Name

Name

Designation

Designation

Seal

Seal

Witness

Signature.....

Signature.....

Name

Name

Designation

Designation

Seal

Seal

Annexure-I

BANK GUARANTEE FORMAT FOR SECURITY DEPOSIT

WHEREAS on or about the _____ day of _____
M/s _____ (Selected Bidder's name & address), having its
registered office situated at _____ (Postal address)
(herein after referred to as the 'Agency') entered into an Agreement bearing reference no.
_____ dtd. _____ with M/s IREL (India) Limited, a company
incorporated under Indian Companies Act having its registered office at Plot No.1207, ECIL
building, Opp. to Siddhivinayak Temple, Veer Savarkar Marg, Prabhadevi, Mumbai – 400 028,
India (herein after referred to as IREL), for _____ (details of order)
(herein after referred to as 'the Agreement').

AND WHEREAS under the terms and conditions of the Agreement the Agency is required to
keep with IREL a Security Deposit of Rs. _____ (Rupees _____ only)
or submit a bank guarantee in lieu of cash deposit for the fulfillment of the terms and conditions
of the Agreement, and whereas AGENCY has chosen to submit a bank guarantee.

We _____ Bank do hereby undertake to pay the amounts due and
payable under this guarantee without any demur, merely on a demand from IREL stating that
the amount claimed is due by way of loss or damage caused to or that would be caused to or
suffered by IREL by reason of breach of any of the terms and conditions of the said Agreement.
Any such demand made on the bank shall be conclusive as regards the amount due and
payable by the bank under this guarantee. The payment will be released within three working
days from the date of demand for payment.

We undertake to pay to IREL any money so demanded notwithstanding any dispute or disputes
raised by the Agency in any suit or proceeding pending before any court or tribunal relating
thereto, our liability under these present being absolute and unequivocal.

The payment so made by us under this guarantees shall be valid discharge of our liability for
payment thereunder and the Agency shall have no claim against us for making such payment.

We _____ (Name of Bank) further agree that the guarantee herein
contained shall remain in full force and effect during the period that would be taken for the
performance of the said Agreement and that it shall continue to be enforceable till all the dues
of IREL under or by virtue of the said Agreement have been fully paid and its claims satisfied or
discharged or till IREL certifies that the terms and conditions of the said Agreement have been
fully and properly carried out by the said Agency and accordingly discharges this guarantee.
Our guarantee shall remain in force until _____ and unless a demand or claim under

this guarantee is made on us in writing within three months from the expiry of the guarantee period, we shall be discharged from all liability under this guarantee thereafter.

We _____ (Name of Bank) , further agree that IREL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extent time of performance by the said Agency from time to time or to postpone for any time or from time to time any of the powers exercisable by IREL against the said Agency and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relived from our liability by reason of any such variation, or extension being granted to the said Agreement or for any forbearance, act or omission on the part of IREL or any indulgence by IREL to the said Agency or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision, have effect of so relieving us.

This guarantee will not be discharged due to the change in the constitution of the bank or the Agency.

We _____ (Name of Bank) lastly undertakes not to revoke this guarantee during its currency except with the previous consent of IREL in writing.

Notwithstanding anything to the contrary contained herein before :

- (i) Our Liability under this Bank Guarantee shall not exceed and restricted to Rs (in words)
- (ii) This Bank Guarantee shall be valid upto, unless extended on demand.
- (iii) The bank is liable to pay the guaranteed amount or any part thereof under this bank Guarantee only if IREL serve a written claim or demand on or before (Three months from the expiry of Guarantee period)

Dated the _____ day of _____ YEAR

_____Bank

(Signature with name in Block letters with designation,
Attorney as per power of Attorney No. _____ dt. _____)

Bank's Common seal

Annexure-II

Bank Guarantee format for Performance Guarantee

WHEREAS on or about the _____ day of _____ M/s _____ (Tenderer's name & address), having its registered office situated at _____ (Postal address) (herein after referred to as 'The Tenderer') entered into a contract bearing reference no. _____ dtd. _____ with _____ (MK unit/Chavara unit/OSCOM unit/RED unit/Corporate Office) of M/s IREL (India) Limited, a company incorporated under Indian Companies Act having its registered office at Plot No.1207, ECIL building, Opp. to Siddhivinayak Temple, Veer Savarkar Marg, Prabhadevi, Mumbai – 400 028, India (herein after referred to as IREL), for _____ (details of order) (herein after referred to as 'The Contract').

AND WHEREAS the Agreement provides that the tenderer shall furnish a Bank Guarantee for Rs. _____ (Rupees _____ only) being ____% (____percent) of the total agreement value as Guarantee for the due fulfillment by the tenderer of the terms and conditions contained in the Agreement, the guarantee remaining valid till the completion of the guarantee period.

We _____ Bank do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on a demand from IREL stating that the amount claimed is due by way of loss or damage caused to or that would be caused to or suffered by IREL by reason of breach by the said tenderer of any of the terms or conditions contained in the said Agreement or by reason of the Bidder's failure to perform the said agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs. _____ (Rupees _____ only).

We undertake to pay to IREL any money so demanded notwithstanding any dispute or disputes raised by the tenderer in any suit or proceeding pending before any court or tribunal relating thereto, our liability under these present being absolute and unequivocal.

The payment so made by us under this guarantees shall be valid discharge of our liability for payment thereunder and the tenderer shall have no claim against us for making such payment.

We _____ Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of IREL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till IREL certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said bidder and accordingly discharges this Guarantee.

We also agree that the amount will be paid by us to the IREL within three working days from the date of demand for payment till the actual date of payment made by us.

Our Guarantee shall remain in force until and unless a demand or claim under this guarantee is made on us in writing within six months from the expiry of the Guarantee period, we shall be discharged from all liability under this Guarantee thereafter.

We _____ Bank, further agree that IREL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extent time of performance by the said tenderer from time to time or to postpone for any time or from time to time any of the distributions exercisable by IREL against the said tenderer and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relived from our liability by reason of any such variation, or extension being granted to the said tenderer or for any forbearance, act or omission on the part of IREL or any indulgence by IREL to the said tenderer or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision, have effect of so relieving us.

This guarantee will not be discharged due to the change in the constitution of the Bank or the bidder.

We _____ Bank lastly undertakes not to revoke this guarantee during its currency except with the previous consent of IREL in writing.

Notwithstanding anything to the contrary contained herein before :

- (a) Our Liability under this Bank Guarantee shall not exceed and restricted to Rs
..... (in words)
- (b) This Bank Guarantee shall be valid upto, unless extended
on demand.
- (c) The bank is liable to pay the guaranteed amount or any part thereof under this
bank Guarantee only if IREL serve a written claim or demand on or before
..... (Three months from the expiry of Guarantee period)

Dated the _____ day of _____ 202__
_____ Bank

(Signature with name in Block letters with designation,
Attorney as per distribution of Attorney No. _____ dt. _____)

Bank's Common seal

Annexure – III

(RFP document, all addendums, corrigendum and clarifications issued by IREL and any other official communications)

Annexure – IV

(Techno-Commercial offer and other documents/ details/ data submitted by Agency at RFP stage)

ANNEXURE V

(Letter of Intent (LOI) issued by IREL to the Agency)

ANNEXURE VI

(L3 Level Schedule/ Master Network: to be submitted by Selected Bidder on or Before Effective Date)

ANNEXURE VII

(Detailed Billing Schedule: to be submitted by Selected Bidder on or Before Effective Date)

ANNEXURE VII

INSTRUCTIONS TO CONTRACTOR FOR STATUTORY COMPLIANCES FOR JOB / WORK / LABOUR CONTRACT

1. Statutory registrations and clearances – Pre-Requisites

Contractor shall commence the work only after obtaining the following:

- Labour License.
- Provident fund code no.
- ESI code no.
- Notice of commencement in Form 6-A & Maintain Register of workers Form-13.

2. Contractor shall ensure following while executing contract

- Employment card as per Contract Labour (Regulation & Abolition) Act.
- Annual leave with wages including National Holiday & Festival holiday.
- Leave record register.
- Shall engage only adult workers who have attained the age of 18.
- Work to be done on second/third shift, overtime, Sundays or on other declared holidays with written permission.
- Obtain insurance cover for his employees/equipments, tools etc & third party insurance coverage at his own cost.
- Remit Provident fund contributions in prescribed 3A & 6A forms.
- ESI contributions in Form 6.
- Submit challans of PF & ESI contributions every month.
- Provide Personal protective equipments for his employees.
- Distribute wage slip each month to his employees
- Ensure payment as per minimum wages act, 1948 in presence of HRM and concerned dept representative.
- Uniform to labours if provided by the Contractor, it must be different from IREL employees.

3. Appointment and termination of workers by contractor

- Contractor shall make appointment of his Employees only for a specific period and same shall be recorded in employment card.
- Contractor shall have the sole discretion to decide on employing, rewarding or terminating the services etc. of his employees. However, his employees must possess such qualifications, experience, age requirement and medical and physical standards as required for the work awarded to the contractor.

- In case of termination of services of any employee of contractor, the contractor will ensure that wagepayment and other dues to his employee is made within 48 hours of termination of services of such employee. While termination of the services of any of his employee, the contractor will discharge all formalities as per the Industrial Dispute Act such as payment of retrenchment compensation and gratuity as due and admissible.

4. Leave with wages

- Contractor shall allow Annual leave with wages as under Mines Act.
- One-day leave for every 20 days of work performed during preceding calendar year after completing 240 days of service in preceding calendar year.
- Un-availed leave can be carried forward to next Calendar year but carry forward should not exceed 30 days. Leave should not be taken more than 3 times in a Calendar year and for which application before 15 days should be made.
- In addition, festival and National Holidays shall also be availed by employee of contractor during the Calendar year as per the holidays declared by the IREL.
- Contractor shall maintain leave record register.

5. Attendance Card

- Contractor has to provide attendance card to his employee who will obtain endorsement of time of arrival at the work place and time of leaving the work place. The contractor shall maintain Attendance card which will be retained by his employee and will be handed over to the contractor after the end of each wage month.

6. Statutory obligations

- Contractor shall engage only adult workers who have attained the age of 18 years and female workers shall not be employed between 7 PM to 6 AM on all days including Sundays and Holidays.
- Contractor shall observe local laws. As far as possible unskilled workers shall be engaged from the local areas only in which work is being executed.
- Contractor shall not employ any inter-state migrant workmen as defined in the Inter-State Migrant Workmen Act in the establishment except by prior permission of the Principal Employer.
- Contractor shall observe Provisions of the Mines Act in respect of working hours, holidays, rest intervals, leave and overtime to his employee.
- In case a contractor employs women as his employee, he will discharge his obligation under law in respect of such women workers such as prohibition of engaging them during night-hours, prohibition of employing them for more than 9 hours per day, provision of creche facility, grant of maternity leave as per rules etc.
- Payment of bonus under the Payment of Bonus Act, Payment of gratuity under the Payment of Gratuity Act, will be the sole responsibility of the contractor.

7. PF & ESI Contribution & Returns

- Contractor shall remit Provident fund contribution of employee's together with Employer's within 15 days from the date of disbursement of wages to his employee. Monthly and annual returns in 3A & 6A prescribed forms should be submitted to the RPFC office. Present rate of employer share of PF is 13.61% and employee share is 12%.
- Contractor shall remit ESI contributions of employee's together with employer's within 21 days of the last day of the calendar month in which the contribution falls due and shall send a return of contribution in Form 6 before 12th May and 12th November of every year along with receipted challans to ESI office. Present rate of employer share is ESI 4.75% and employee is 1.75%
- Contractor shall submit a copy of latest PF& ESI returns and inspection reports from statutory authorities alongwith a copy of challans for having deposited PF & ESI contributions every month.
- Contractor shall submit following Certificate for each contract separately every month.
 " It is certified that PF challans of the amount ----- pertains to my workers whose names are appearing in the wage sheet of the month ----- and these workers are engaged in ----- (type of work) against work order no. ----- in ----- (name of department).

Signature of Contractor

Note : - Similar certificate shall be submitted for ESI also.

- Contractor shall fully comply all other formalities as per the PF & ESI statutory provisions and submit a copy of the same for replying to Statutory authorities in case of any complaints.

8. Medical care in case of accident

- It is the responsibility of contractor to undertake necessary care and make arrangement for transportation and treatment of his employee at ESI Hospital or any tie up hospitals of ESIC.
- Contractor should assist and guide his employees for claiming lawful benefits from ESI.

9. Supervision

Contractor shall employ adequate number of competent and qualified supervisors to supervise and control his employee at the work spot during execution of work for effective supervision. They will also identify their employee and regulate entry at gate at the time of entering and leaving the factory. Name and address of the Supervisor shall be submitted to the concerned department by the contractor.

10. Payment of wages

- Payment shall be made by the contractor to his employees as per their category & nature of work, which shall not be less than the rates declared from time to time under Minimum Wages Act, by Govt. of India.

- Over and above the daily wage rate, payment shall be made for leave with wages.
- Contractor shall be responsible for making payment of wages before expiry of 7 days from the last day of wage period and to ensure disbursement of wages in the presence of the authorised representative of contract operating division who shall record under his signature at the end of entries in the Register of wages in the following form

"Certified that the amount shown in column no. has been paid to the workers concerned in my presence on date at time.....".

Signature of representative

- Contractor shall distribute wage slip to his employee one day before the monthly wage payment date.

11. Safety and disciplinary action

- Contractor shall ensure that his employee does not indulge in any unsafe or hazardous practices. They use safety equipment such as safety belts, safety shoes, goggles, helmet and masks where use of such equipment is required in day-to-day operations. All such safety gadgets will be provided by the contractor failing which the contract operating division will provide safety equipment to such employee of the contractor at the cost of the contractor to be recovered from his bills. Contractor shall fully indemnify IREL against any claim for damages for injury to person or property resulting from such accidents.
- Contractor to ensure that employee deployed in the premises is physically and mentally fit and do not have any criminal record.
- Contractor will be responsible for good conduct of his employees. In case of misconduct, contractor shall take prompt disciplinary action as per "Model Standing Orders" on the advise of Contracting officer.
- Contract awarded is liable for termination for any contravention of statutory provisions or any other reasons without assigning any explanation or notice to the contractor.
- Contractor shall fully comply provisions of various applicable labour laws.

12. Records & information to be furnished by contractor

- Contractor shall maintain neatly, completely and legibly registers, records, reports and returns for inspection by various authorities at short notice.
- Contractor shall submit the details of work awarded to him by other departments indicating work order No., nature of work and maximum number of workers employed etc.
- Contractor shall provide information as required in respect of all of his employees employed by him to enable the Contract operating division to monitor compliance of P.F./ESI and also to enable him to furnish information to Ministry and Labour deptt. as may be required.

- Contractor shall provide full particulars of each employee employed by him before start of the work and from time to time. He will also endorse a copy of returns furnished by him to the Labour Department under the Contract Labour (Regulation and Abolition) Act 1970.

13. Compliance of Statutory provisions

Contractor shall fully comply provisions of the following enactments and other enactments as applicable for such contracts.

- Contract Labour (R&A) Act 1970 and rules 1971.
- Payment of Wages Act.
- Mines Act, 1952
- Minimum Wages act 1948, M.P. Rules 1958.
- Employees State Insurance Act 1948, Rules and Regulations 1950.
- Employees Provident Fund Act 1952 and Pension Scheme 1995.
- Workmen's Compensation Act 1923.
- Maternity Benefit Act 1961.
- Equal Emolument Act 1976.
- Payment of Bonus Act 1963,
- Inter State Migrant Workmen Act
- Industrial Disputes Act, 1947

GUIDE LINES IN CASE OF ACCIDENT

Steps to be followed

- 1) Locate the contractor & also inform Welfare Department with the full details of the injured person and accident.
- 2) Take the injured person immediately to OHC for first aid.
- 3) The contractor should report the accident in form 16 to Manager (ESI), Nagercoil within 24 hours of accident.
- 4) After First aid treatment, the contractor should immediately take his employee for further treatment & admission at ESI Hospital, if required.
- 5) Contractor should inform the concern deptt. & Welfare Department in case where absence is more than 48 hours.
- 6) Contractor should inform the date of joining to the Welfare Department of IREL for informing the statutory authority.

Responsibilities of Employees engaged by the Contractors:

- 1) An employee must, while at work, take reasonable care for the health and safety of people who are at the employee's place of work and who may be affected by the employee's act or omissions at work.
- 2) An employee must, while at work, co-operate with his or her employer or other persons so far as is necessary to enable compliance with any requirement under the act or the regulations that is imposed in the interest of health, safety and welfare of the employee or any other person.