Request for Proposal for

Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years

AND

Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City under "Smart City Mission"

DEHRADUN SMART CITY LIMITED (DSCL)

777, Saatvik Tower, Rajender Nagar,
Kaulagarh Road, Dehradun, 248001, Uttarakhand, India
Ph: 0135-270894, Fax: 0135-2750817

RFP No: 2/DSCL/19-20/NCB/ESCO

Issued on: 12/11/2019

DISCLAIMER

The information contained in this Request for Proposal (RFP) document or subsequently provided to Bidders, whether verbally or in documentary form by or on behalf of Dehradun Smart City Limited or any of its employees or Transaction advisors, is provided to Bidders on the terms and conditions set out in this RFP document and any other terms and conditions subject to which such information is provided.

This RFP document is not an Agreement and is not an offer or invitation to any other party. The purpose of this RFP document is to provide the Bidders with information to assist the formulation of their Bid submission. This RFP document does not purport to contain all the information each Bidder may require. This RFP document may not be appropriate for all persons and it is not possible for DSCL and their employees or Transaction advisors to consider the investment objectives, financial situation and particular needs of each Bidder. Certain Bidders may have a better knowledge of the proposed Project than others. Each recipient must conduct its own analysis of the information contained in this RFP document or to correct any inaccuracies therein that may appear in this RFP document and is advised to carry out its own investigation into the proposed Project, the legislative and regulatory regimes which applies thereto and by and all matters pertinent to the proposed Project and to seek its own professional advice on the legal, financial, regulatory and taxation consequences of entering into any agreement or arrangement relating to the proposed Project.

DSCL and their employees and Transaction advisors make no representation or warranty and shall incur no liability under the Law of Contract, Tort, the Principles of Restitution or unjust enrichment or otherwise for any loss, expense or damage, accuracy, reliability or completeness of the RFP document, which may arise from or be incurred or suffered in connection with anything contained in this RFP, any matter deemed to form part of this RFP document, the award of the Project, the information and any other information supplied by or on behalf DSCL or their employees, any consultants or otherwise arising in any way from the selection process for the Project.

DSCL may in its absolute discretion, but without being under any obligation to do so, can amend or supplement the information/clauses/articles in this RFP document. The information that DSCL is in a position to furnish is limited to this RFP only. The information contained in the RFP must be kept confidential. Mere submission of a responsive Bid/ Bid does not ensure selection of the Bidder as Contractor.

NOTICE INVITING TENDER-IMPORTANT DATES

Sl. No.	Activity	Duration
1.	Bid Ref No.	2/DSCL/19-20/NCB/ESCO Model with SCADA and Instrumentation for Complete Automation
2.	Availability of Bid Documents	The Bid documents for this work shall be available from website http://uktenders.gov.in **from 12/11/2019 at 1000 Hours to 02/12/2019 up to 1000 Hours.**
3.	Pre-Bid Meeting	**19/11/2019 at 1100 Hours**. Bidder shall have to email their queries to agmproc-dscl@uk.gov.in on or before the pre-bid meeting date. Venue of Pre Bid Conference – Dehradun Smart City Limited, 777, Saatvik Tower, Rajender Nagar, Kaulagarh Road, Dehradun, 248001, Uttarakhand, India, Ph: 0135-2750894, Fax: 0135-2750817
4.	Pre-Bid Meeting Coordinator	**Mr. Surya Kotnala, Asst. General Manager (Procurement & Contract Management), Mob: +91 7060033338**
5.	Last date for downloading of Bid document from the E-procurement portal http://uktenders.gov.in	**02/12/2019 up to 1000 Hours**. The scan copy of the RFP document fees (Non-Refundable), Bid Security (EMD) and Affidavit shall be uploaded on the e-procurement website.
6.	Last date and time for Bid submission/ uploading of Bid in E-procurement	**02/12/2019 up to 1030 Hours**
7.	Submission of original documents i.e. RFP document fees (Non-Refundable), Bid Security (EMD) and Affidavit	**02/12/2019 up to 1100 Hours (Afternoon)** Address for submission of original documents: Dehradun Smart City Limited, 777, Saatvik Tower, Rajender Nagar, Kaulagarh Road, Dehradun, 248001, Uttarakhand, India, Ph: 0135-2750894, Fax: 0135-2750817
8.	Time and date of opening of Technical Bids	The Technical Bids will be opened on line by the Authorized Officers on 02**/12/2019 at 1130 Hours in** DSCL office.
9.	Date and time of opening of Financial Bids	Shall be informed later to technically qualified Bidders

NOTICE INVITING TENDER -IMPORTANT DATA

Bid Ref No.	2/DSCL/19-20/NCB/ESCO	
Organization Name	Dehradun Smart City Limited (DSCL)	
Name of Work	Request for Proposal for Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years AND Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City under "Smart City Mission" .	
Bid Type	National Competitive Bidding(NCB) Item Rate Mode & ESCO Mode (PPP Mode)	
Bid Currency	Indian National Rupees (INR) Only	
Payment Details	Bid validity period	180 days from the last date of Bid submission
	Project Duration	Implementation period –12 Months from the date of contract signing. Defect liability Period – 10 Years after the successful implementation period. Operation & Maintenance Period (ESCO Mode) - 10 years after the successful implementation period.
	RFP Document Fees **(Non-refundable)**	INR 5,900/- (Indian Rupees Five Thousand Nine Hundred Only) including GST in the form of demand draft drawn in favor of "Chief Executive Officer, Dehradun Smart City Limited, payable at Dehradun"
	Bid Security (EMD)	INR 81, 63,000/- (Indian Rupees Eighty One Lakhs Sixty Three Thousand Only) in the form of TDR/FDR payable at Dehradun or an unconditional Bank Guarantee issued in favor of "Chief Executive Officer, Dehradun Smart City Limited'.
Addendum/Corrigendum	**Any Addendum/Corrigendum will be published on website http:// uktenders.gov.in only.**	

CONTENTS OF RFP DOCUMENT

SECTION-I
INSTRUCTIONS TO BIDDERS

Section I -Instructions to Bidders (ITB)

	General
1. Scope of Proposal	The Employer as defined in the BDS invite Proposals/bids for the Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years AND Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City The bidders may submit bid of the work detailed given in the RFP. 1.1 The successful Bidder will be expected to complete the Works by the Intended Completion Date specified in the section II, General Conditions of Contract. 1.2 Throughout these documents, (a) The terms "Proposal", "bid" and "tender" and their derivatives (bidder/ tenderer, bid/ tender, bidding/ tendering, etc.) are synonymous. (b) The term "in writing" means communicated in written form (e.g. by mail, e-mail, and fax, including if specified in the BDS, distributed or received through the electronic-procurement system used by the Employer) with proof of receipt; (c) if the context so requires, "singular" means "plural" and vice versa; and (d) "Day" means calendar day.
2. Source of Funds	2.1 The funds shall be made available by the Government of India & Government of Uttarakhand
3. Eligible Bidders	3.1 A Bidder may be a firm that is a private entity, a state-owned enterprise or institution subject to ITB 3.5 or manufacturer / authorized dealer of the highest type of pumps, motors, automation equipment to be installed & maintained in this contract– or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a Joint Venture (JV). In the case of a JV: (a) all partners shall be jointly and severally liable, and (b) The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event

	the JV is awarded the Contract, during contract execution. (c) JV will be allowed with a maximum no. of 3 (three) firms 1 lead member +2 other member) (d) The bidder shall not alter its composition or legal status without the prior consent of the Procuring Entity / Employer. 3.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of India. 3.3 Government of Uttarakhand considers a conflict of interest to be a situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations, and that such conflict of interest may contribute to or constitute a prohibited practice. DSCL will take appropriate actions, which include not financing the contract, if it determines that a conflict of interest has flawed the integrity of any procurement process. Consequently all Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process if, including but not limited to: (a) they have controlling shareholders in common; or (b) they receive or have received any direct or indirect subsidy from any of them; or (c) they have the same legal representative for purposes of this bid; or (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or (e) influence the decisions of the Employer regarding this bidding process; or (f) A Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bid in which the party is involved. However, this does not limit the inclusion of the same subcontractor, not otherwise participating as a Bidder, in more than one bid; or (g) A Bidder participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; or (h) A Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer as Engineer for the contract. 3.4 A firm shall not be eligible to participate in any procurement

	activities under a Government-financed project while under sanction imposed by DSCL. A bid from a sanctioned firm will be rejected. 3.5 Government-owned enterprises shall be eligible only if they can establish that they are legally and financially autonomous and operate under commercial law, and that they are not a dependent agency of the Employer. 3.6 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request. 3.7 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to pre-qualified Bidders.. 3.8 Bidder should be registered in any State/Central Govt. organization.
	Bidding Documents
	Contents of Bidding Document
4. Sections of Bidding Document	4.1 The set of bidding documents comprises the documents listed below and should be read in conjunction with any addenda issued in accordance with Clause 6 of ITB. **PART 1** 1. Section I Instructions to Bidders (ITB) 1.1 Section 1.1 Bid Data Sheet (BDS) 1.2 Section 1.2 - Evaluation and Qualification Criteria 1.3 Section 1.3 - Bidding Forms 2. Section II - Draft Concession Agreement 3. Section III – Project Information Memorandum **PART II** 1. Bill of Quantities (Price-Bid BOQ) (i) Schedule A- Price Bid for ESCO Mode (ii) Schedule B- Price Bid for Item rate Mode 4.2 Bidding document will be available online on the website http://uktenders.gov.in. The bidder is expected to examine carefully all instructions, conditions of contract, Bid forms, terms and specifications, bill of quantities, Contract forms and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 26.2 hereof, bids, which are not substantially responsive to the requirements of the Bid Documents, shall be rejected.

5. Clarification of Bidding Documents, Pre-bid Meeting & site visit	5.1 Prospective bidder requiring any clarification of the bidding document may notify the employer in writing by email on **agmproc-dscl@uk.gov.in**. The Employer will respond to any request for clarification received on or before the date of the pre-bid meeting. Copies of the employer's response will be uploaded in the e-procurement portal only including a description of the enquiry, but without identifying its source. 5.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself, on its own risk and responsibility, all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense. 5.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection. 5.4 If a pre-bid meeting is to be held, the bidder or his authorized representative is invited to attend it. Its date, time and address are given in the notice inviting tender. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. 5.5 The bidder is requested to submit any questions in writing on or before the pre bid meeting date in the format provided. 5.6 Minutes of the meeting, including the text of the questions raised (without identifying the source of the enquiry) and the responses given will be transmitted online (or otherwise). Any modifications of the bidding documents listed in Clause 4.1 of ITB, which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively online through the issue of an Addendum pursuant to Clause 6 of ITB and not through the minutes of the pre-bid meeting. 5.7 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.
6. Amendment of Bidding Documents	6.1 Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing addenda online. 6.2 Any addendum thus issued shall be part of the bidding documents**.**

	6.3 To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer shall extend, as necessary, the deadline for submission of bids, in accordance with Clause **20.2 of ITB.**
	Preparation of Bids
7. Language of Bids	7.1 All documents relating to the Bid shall be in the language specified in the BDS.
8. Documents Comprising the Bid	8.1 The Bid shall comprise two envelopes submitted simultaneously online on the e-Government Procurement System (e-GPS) in accordance with ITB 20.1. One called the Technical Bid containing the documents listed in ITB 8.2 and the other the Price Bid containing the documents listed in ITB 8.3. 8.2 The Technical Bid shall comprise the following: (a) Letter of Technical Bid; (b) Bid Security, in accordance with ITB 12; (c) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 13.1; (d) documentary evidence in accordance with ITB 18.1 establishing the Bidder's qualifications to perform the contract; (e) Technical Proposal in accordance with ITB 15.1; (f) Any other document required in the BDS. 8.3 The Price Bid shall comprise the following: (a) Letter of Price Bid; Completed Price Schedules, in accordance with ITB 9 and 10, or as stipulated in the BDS. (b) Any other document required in the BDS. 8.4 In addition to the requirements under ITB 8.2, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all partners. Alternatively, a Letter of Intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all partners and submitted with the bid, together with a copy of the agreement.
9. Bid Prices	9.1 The Contract shall be for the whole Works, as described in Scope of Works, Section V, based on the priced Bill of Quantities submitted by the Bidder. 9.2 The Price bid made by the contractor should exclude the GST and all other taxes and duties. For GST, refer GCC clause 41.1. Therefore, all the duties, taxes, royalties and other levies payable by the Contractor under the Contract, or for any other cause, shall be excluded in the rates, prices, and total Bid price submitted by the Bidder. 9.3 The rates and prices quoted by the Bidder shall be fixed for the entire duration of the Contract and shall not be subjected to adjustment.

10. Currencies of Bid	10.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees only.
11. Bid Validity	11.1 "Bids shall remain valid for a period specified in the BDS after the deadline date for bid submission specified in Clause 19.1 of ITB." 11.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by email. A bidder may refuse the request without 11.3 Forfeiting his Bid Security/ Earnest Money. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his earnest money for a period of the extension, and in compliance with Clause 12 of ITB in all respects.
12. Earnest Money	12.1 The Bidder shall furnish, as part of the Bid, Earnest Money, in the amount specified in the BDS. 12.2 The Earnest Money Deposit (EMD) shall, at the Bidder's option, be in the form of Fixed Deposit Receipt, Bank Guarantee of a scheduled commercial bank, issued in favor of the name given in the BDS& shall be valid for six months or more after the last date of receipt of bids. Earnest money will be deposited, physically, with officer calling tender, before last date of submission of tender. A scanned copy of earnest money document will be submitted along with the tender 12.3 Any bid not accompanied by an acceptable Earnest Money, shall be rejected by the Employer as non-responsive. 12.4 The Earnest Money of unsuccessful bidders will be returned within 60 days of the end of the Bid validity period specified in Clause 11.1 of ITB. 12.5 The Earnest Money of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Security. 12.6 The Earnest Money may be forfeited: If the Bidder withdraws the Bid after bid opening (technical bid) during the period of Bid validity; (a) In the case of a successful Bidder, if the Bidder fails within the specified time limit to (b) Sign the Agreement; and/or

	(c) Furnish the required Performance Security.
13. Format and Signing of Bid	13.1 Bidders shall submit their Bid electronically. Procedures for submission, sealing and marking are outlined in the ITB16. 13.2 The Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature.
14. Cost of Bidding	14.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the **Employer** shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.
15. Documents Comprising the Bid	15.1 The Bidder shall furnish, as part of the Technical Bid, a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.
	Bid Submission
16. Process of e-Bid Submission	16.1 **Instruction for Online Bid Submission** I. Instructions to the Bidders to submit the bids online through the procurement portal for Procurement at http://uktenders.gov.in. II. Possession of valid Digital Signature Certificate (DSC) and enrollment/registration of the contractors/bidders on the e-Procurement/e-tender portal are prerequisite for e- tendering. II. Bidder should read each and every rules/regulations for uploading the bid on the e-procurement portal. 16.2 **Submission of Original Documents**: The bidders are required to separately submit (i) original demand drafts towards the cost of bid document and registration on e-procurement website (if not previously registered) (as per RFP); and (ii) original bid security in approved form; and (iii) original affidavit regarding correctness of information furnished with bid document, in the office **specified in the BDS**, before the opening of the technical part of the Bid, either by registered/speed post/courier or by hand, failing which the bids will be declared non-responsive and will not be opened. Hard copy of rest of the bid or any other document is not to be submitted.
17. Alternative Bids	17.1 Unless otherwise specified **in the BDS**, alternative Bids shall not be considered.

18. Documents Establishing the Eligibility and Qualifications of the Bidder	18.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).
19. Deadline for Submission of Bids	19.1 Bids must be uploaded online no later than the date and time **specified In the BDS**. 19.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the bidding document in accordance with ITB 6, In which case all rights and obligations of the Employer and Bidders previously subject to the dead line shall thereafter be subject to the dead line as extended.
20. Late Bids	20.1 The electronic bidding system would not allow any late submission of bids after due date & time as per server time.
21. Withdrawal , Substitution, and Modification of Bids	21.1 A Bidder may withdraw, substitute, or modify its Bid – Technical or Price prior to deadline for submission of Bids.
	Bid Opening
22. Opening of Technical Bids	22.1 The Employer will open the bids received, on line in the presence of the bidders/bidders' representatives who choose to attend at the time, date and place specified in the BDS. In the event of the specified date for the submission of bids being declared a holiday for the Employer, the Bids will be opened at the appointed time online on the next working day. 22.2 The technical bid shall be opened online. 22.3 The Employer will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Clause 22.1 of ITB. 22.4 Evaluation of the technical bids with respect to bid security, qualification information and other information furnished in Part I of the bid in pursuant to Clause 4.1 of ITB, shall be taken up and at the end of evaluation of technical bid a list will be drawn up of the responsive bids whose financial bids are eligible for consideration. 22.5 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bid being substantially non-responsive to the requirements of the Bidding Document. 22.6 At the time of the opening of the 'Financial Bid', the names of the bidders whose bids were found responsive in accordance with clause 22(iv) of ITB will be announced. The financial bids of only

	these bidders will be opened. The responsive bidders' names, the Bid prices, the total amount of each bid, and such other details as the Employer may consider appropriate will be announced by the Employer at the time of bid opening. Any Bid price, which is not read out and recorded, will not be taken into account in Bid Evaluation. 22.7 The Employer shall prepare the minutes of the opening of the Financial Bids. 22.8 Process to be Confidential 22.9 Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any attempt by a Bidder to influence the Employer's processing of bids or award decisions may result in the rejection of his Bid 22.10 Clarification of Bids and Contacting the Employer 22.11 No Bidder shall contact the Employer on any matter relating to its bid from the time of the bid opening to the time the contract is awarded. 22.12 Any attempt by the bidder to influence the Employer's bid evaluation, bid comparison or contract award decision may result in the rejection of his bid. 22.13 Examination of Bids and Determination of Responsiveness 22.14 During the detailed evaluation of "Technical Bids", the Employer will determine whether each Bid (a) meets the eligibility criteria defined in Clauses 3 and 4; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the bidding documents. During the detailed evaluation of the "Financial Bids", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications and drawings. 22.15 A substantially responsive "Financial Bid" is one that conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the bidding documents, the

	Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive bids. 22.16 If a "Financial Bid" is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.
	Evaluation and Comparison of Bid
23. Confidentiality	23.1 Information relating to the examination, evaluation, comparison, and post qualification of Bid and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders. 23.2 Any attempt by a Bidder to influence the Employer in the evaluation of the Bid or Contract award decisions may result in the rejection of its Bid.
	23.3 Notwithstanding ITB 23.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.
24. Clarification of Bids	24.1 To assist in the examination, evaluation, and comparison of the Technical and Price Bid, the Employer may, at its discretion, ask any Bidder for a clarification of its bid or submission in original, of any document submitted in the electronic bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Price Bid, in accordance with ITB 27. 24.2 If a Bidder does not provide clarifications of its Bid by the date and time set In the Employer's request for clarification, its Bid may be rejected.
25. Deviations, Reservations, and Omissions	25.1 During the evaluation of Bids, the following definitions apply: (a) "Deviation" is a departure from the requirements specified In the bidding document; (b) "Reservation" is the setting of limiting conditions or with holding from complete acceptance of the requirements specified In the bidding document; and "Omission" is the failure to submit part or all of the Information or documentation required In the bidding document.
26. Preliminary Examination of	26.1 The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB Sub-

Technical Bid	Clause 8.2 have been provided, and to determine the completeness of each document submitted.
	26.2 The Employer shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer shall be rejected. (a) Letter of Technical Bid; (b) Written confirmation of authorization to commit the Bidder; (c) Bid Security, if applicable; and (d) Technical Proposal in accordance with ITB15.
27. Correction of errors	27.1 The e-procurement system automatically calculates the total amount from unit rates and quantities and the system also automatically populates the amount in words from the amount In figures and therefore there is no scope of discrepancy and need for arithmetic correction
28. Evaluation of Price Bid	28.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted. 28.2 To evaluate the Price Bid, the Employer shall consider the following: **(a). Calculation of Estimated cost of Tender for Schedule –A (For ESCO Mode)** (i) Present Annual Electricity Expenditure of Jal Sansthan on All Tube Wells & Booster Pumping Stations = 35,30,80,152.49 Estimated Energy Cost Savings in ESCO Model (i) Minimum Guaranteed Saving (10%) = 3,53,08,152 (ii) Additional Estimated Saving (10%) = 3,53,08,152 Estimated Energy Cost Savings for calculation of cost of Schedule –A (iii) 3,53,08,152 per annum * 10 years = 35,30,80,152.49 Therefore, Total Estimated Saving in Schedule-A = INR 35,30,80,152.49 **(ii).** The contractor will offer % of DSCL's share in the Additional Energy Cost Savings **in Excess of** **Minimum Guaranteed Saving of 10%** = **X%** **(III). The Value of the offer given by Bidder for Schedule-A = 35,30,80,152.49 * X/100** **(b). The Value of offer given by Bidder for Schedule-B = Y** Now, the Value of sum of Schedule-A and Schedule-B **((35,30,80,152.49-35,30,80,152.49*X/100) + Y)** should be the least for the Lowest Bidder compared to other bidders. **Note : The Cost of tender is approximate, taken on behalf of the Avg. Electricity bills in past, however the cost of tender will depend on the actual base line data of the Tube Wells & Booster Pumping Stations covered under the project.**

	28.3 The bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities for admeasurement contracts, or Schedule of Prices for lump sum contracts, but including Day work items, where priced competitively; 28.4 price adjustment for correction of arithmetic errors in accordance with ITB 27.1; 28.5 price adjustment due to discounts offered in accordance with ITB 17.4; 28.6 adjustment for nonconformities in accordance with ITB 30.3; 28.7 application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria); 28.8 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation. 28.9 If the Bid in an admeasurement contract, which results in the lowest Evaluated Bid Price, is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. The increase in performance security shall be evaluated as per procedures specified in BDS.
29. Employer's Right to accept any Bid and to Reject any or all Bids	29.1 Employer reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Employer's action.
	Award of Contract
30. Award Criteria	30.1 The Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid for aggregate Engineer construction and operation & maintenance and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily

31. Notification of Award	31.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, via the Letter of Acceptance/Award included in the Contract Forms, that its bid has been accepted. 31.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract. 30.3 At the same time, the Employer shall also notify all other Bidders of the results of the bidding, and shall publish in an English language newspaper or well-known and freely accessible website the results identifying the bid and contract numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at Bid Opening; (iii) name and evaluated prices of each Bid that was evaluated; (iv) name of bidders whose Bid were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded. After publication of the award, unsuccessful bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their Bid were not selected. The Employer shall promptly respond in writing to any unsuccessful Bidder who, after publication of contract award, requests a debriefing.
32. Signing of Contract	32.1 Promptly after notification, the Employer shall send the successful Bidder the Contract Agreement. 32.2 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.
33. Performance Security	33.1 Within 21 (twenty one) days after receipt of the Letter of Acceptance/Award, the successful Bidder shall deliver to the Employer a Performance Security sum of five (5%) of the Contract Price of Schedule-B, & additional Performance Security if applicable and 10 (ten) % of one year Guaranteed Energy Saving cost of Schedule-A, valid up to 60 days beyond the date of completion of all the contractual obligations including O&M period of ten years. 33.2 The performance security shall be either in the form of an unconditional Bank Guarantee or fixed deposit Receipts (FDR), in favor of Chief Executive Officer, Dehradun Smart City Limited Payable at Dehradun, Uttarakhand, from a Scheduled Commercial Bank. 33.3 Failure of the successful Bidder to comply with the requirements

	of Clause 32.1.shall constitutes sufficient grounds for cancellation of the award and forfeiture of the Earnest Money. He will also be debarred from participating in future bids under Dehradun Smart City Limited.
34. Advances:	34.1 The employer will provide mobilization advances and advance against security of equipment as provided in Part I General Condition of Contract. If specified in the tender document.
35. Corrupt or Fraudulent Practices	35.1 The Employer requires the bidders/ Contractors to strictly observe the laws against fraud and corruption in force in India, namely, Prevention of Corruption Act, 1988.

SECTION 1.2

BID DATA SHEET (BDS)

Section 1.2 – Bid Data Sheet (BDS)

ITB Reference	A. General
ITB 1.1	The number of the Invitation for Bids is: 2/DSCL/19-20/NCB/ESCO The Employer is: Chief Executive Officer, Dehradun Smart City Limited The name of the RFP is: Request for Proposal for Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years AND Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City Under "Smart City Mission"
	Contents of Bidding Document
ITB 5.1	**For clarification purpose only,** the Employer address is: Dehradun Smart City Limited, 777, Saatvik Tower , Rajender Nagar, Kaulagarh Road, Dehradun-248001, Uttarakhand, Email : agmproc-dscl@uk.gov.in
ITB 5.2	A Pre-Bid meeting ***shall*** take place. Place: Dehradun Smart City Limited, 777, Saatvik Tower , Rajender Nagar, Kaulagarh Road, Dehradun-248001, Uttarakhand, Email : agmproc-dscl@uk.gov.in **Date: 19/11/2019** **Time: 1100 Hours onwards**
ITB 6.1	Any addendum/clarification shall be uploaded on the portal http://uktenders.gov.in only
	Preparation of Bids
ITB 7.1	The language of the bid is : English
ITB 8.2	The Bidder should also refer to the checklist enclosed in the RFP for submission of the documents.
ITB 9.2	The rates quoted by the Contractor shall be exclusive of GST which will be paid /adjusted by the client at the time of payment of the bills of the Contractor and shall be deemed to be Inclusive of other taxes that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties In regard to the deduction of such taxes at source [TDS] as per applicable law.
ITB 11.1	The Bid validity period shall be 180 **days**.
ITB 12.1	The bidder shall furnish a Bid Security/EMD for an amount of **INR 81.63 Lakhs Only)** valid till 45 days beyond the validity of Bids i.e. (180+45 days).

ITB 12.2	The Bid Security/EMD shall be in the form of Demand Draft/FDR/TDR payable at Dehradun or an Unconditional Bank Guarantee issued in favor of Chief Executive Officer, Dehradun Smart City Limited.
ITB 13.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of Legally Enforceable Power of Attorney.
	Bid Submission
ITB 16.2	The date and time for submission of original documents like RFP Document Fees(Non-Refundable), Bid Security/EMD and Affidavit for Correctness of Bid is: **Date: 02/12/2019** **Time: Up to 1100 Hours** Place: Dehradun Smart City Limited, 777, Saatvik Tower , Rajender Nagar, Kaulagarh Road, Dehradun-248001, Uttarakhand
ITB 17.1	Alternative Bids shall not be permitted.
ITB 19.1	The deadline for uploading the Bids is: **Date: 02/12/2019** **Time: Up to 1030 Hours** Place: Dehradun Smart City Limited, 777, Saatvik Tower , Rajender Nagar, Kaulagarh Road, Dehradun-248001, Uttarakhand
	Bid Opening
ITB 22.1	The online Bid opening of Technical Parts of Bids shall take place at: Dehradun Smart City Limited, 777, Saatvik Tower, Rajender Nagar, Kaulagarh Road, Dehradun-248001, Uttarakhand. **Date: 02/12/2019** **Time: 1130 Hours**
ITB 28.9	The amount of additional performance security shall be worked out as follows: 1. No additional performance security for items up to 5% below the estimated item rates. 2. From 5% below to 15% below the estimated rate an additional performance security of 0.50% of the estimated cost of the item for every 1% below the estimated rate. 3. For more than 15% below the estimated rate, an additional performance security of 1% of the estimated cost of the item for every 1% below the estimated cost.

SECTION 1.3

EVALUATION AND QUALIFICATION CRITERIA

Section 1.3 - Evaluation and Qualification Criteria

1.0 EVALUATION

The bidder shall fulfill the following qualifying requirements:-

1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section V (Scope of Work) & Section VIII (Special Condition of Contract).

Non-compliance with equipment and personnel requirements described in Section 5 (Scope of Work) shall not be grounds for bid rejection and such non-compliance will be subject to clarification and rectification prior to contract award.

2.0 Qualification Criteria

The Technical Bids will be evaluated based on the following criteria

No	Criteria	Requirement	Compliance Requirements				Submission Requirements
			Single Entity	Joint Venture (existing or Intended) where permitted			
				All members Combined	At least one Member	Each Member	
1	Certification	The Bidder must be Certified as ESCO Company from Bureau of Energy Efficiency (BEE), Govt. of India, New Delhi, with Grade 1/2/3, a self-certified up to date list released by BEE need to be submitted along with the bid as proof, and same must be available on BEE official web page (https://beeindia.gov.in) for verification.	Must meet requirement	N/A	Must meet requirement	N/A	self-certified updated list released by BEE
2	Net Worth	Minimum Net-Worth Required is INR 14.16 Crores for the last FY.	Must meet requirement	Must meet requirements	Must meet 50% of the requirement	Must meet 25% of the requirement	Form Fin 1

3	**Annual Construction Turnover**	The Bidder shall have minimum annual turnover in any of the last five financial years for a value of **INR 56.63 Crores Only.**	meet Must requirement	Must meet requirements	Must meet 50% of the requirement	Must meet 25% of the requirement	Form Fin 2
4(a)	**Project Execution of Automation (Contract of Similar Nature)**	**Automation Works in Water Supply segment with instrumentation like Flow Meters, Sluice Valves, Valve Actuators, Level Sensors, Pressure Transmitters, Automated Chlorinators etc. and their integration with SCADA :** Bidder should have successfully completed as a prime contractor, JV member or Sub Contractor in the last 7 years at least - (a) One similar work of contract value INR 22.57 Cr. OR (b) Two similar works of contract value of contract value INR 14.11 Cr. OR (c) Three similar works of contract value INR 11.28 Cr. Note: Value updated to the price level of the financial year 2018- 19 at the rate of 5% per year.	Must meet requirement	N/A	Must meet requirement	N/A	Form EXP 2(a) with attachments

4(b)	**ESCO Experience (Contract of Similar Nature)**	**ESCO Projects with SCADA** The Bidder should have experience of successful execution of ESCO Projects involving Energy Saving and also including Web based SCADA in last 7 preceding years at least - (a) One ESCO Works in water supply scheme with actual annual energy saving of INR 2.82 Cr per year. OR (b) Two ESCO Works in water supply scheme with actual annual energy saving of INR 1.77 Cr per year. OR (c) Three ESCO Works in water supply scheme with actual annual energy saving of INR 1.41 Cr per year. Note: Value updated to the price level of the financial year 2018- 19 at the rate of 5% per year.	Must meet requirement	N/A	Must meet requirement	N/A	Form EXP 2(a) with attachments
4(c)	**Project Execution of O&M (Contract of Similar Nature)**	**O&M of works involving Pumping Station (s) only or Pumping Station (s) and tube wells both**: The bidder should have experience of successful under-execution/completion of O&M of minimum 1 year during last 7 years up to the date of submission of tender, of a pumping station involving EMI (Electrical Mechanical Instrumentation) works of total installed capacity of pumping sets of 617 KW (equal to the total installed capacity in the largest pumping station to be maintained under the contract) AND a cumulative experience of successful under-execution/completion of O&M of minimum 1 year during last 7 years up to the date of submission of tender, of pumping systems involving EMI (Electrical Mechanical Instrumentation) works of total installed capacity of pumping sets of 5000 KW (equal to 50% of the total installed capacity of all the tube wells & pumping stations to be maintained under the contract)	Must meet requirement	Must meet requirement	N/A	N/A	Form EXP 2(a) with attachments

5	**Bid Capacity**	Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity for construction work is equal to or more than the total bid value of the work. The available bid capacity will be calculated as under: Assessed Available bid capacity = (A*N*1.5-B) Where, A = Maximum value of works executed In any one year during the last five years (updated to the price level of the financial year 2018-19 at the rate of 5% per year), taking Into account the completed as well as works In progress). N = Number of years prescribed for completion of the works for which bids are Invited (period up to 6 months to be taken as half-year and more than 6 months as one year). B = Value, at the current price level, of existing commitments on on-going works to be completed during the period of completion of the works for which bids are Invited. Note: Bidder has to provide the details of the existing commitments in the FIN-4 form mentioned in Section-IV, Bidding Forms. .	Must meet requirement	Must meet requirement	N/A	N/A	FIN-4

D. **Key Personnel**

The Bidder must demonstrate that he has suitably qualified (and in adequate numbers) minimum Key Personnel, as described in the Table below, those are required to perform the Contract. The Bidder shall provide details of the Key Personnel and such other Key Personnel that the Bidder considers appropriate, together with their academic qualifications and work experience. The Bidder shall complete the relevant Forms in Section IV, Bidding Forms. Bidder shall require the Employer's consent to substitute or replace the Key Personnel (reference the General Conditions of Contract 9.1) with equivalent or better qualifications only.

Sl No.	Position	Minimum Qualification	Number	Total years of work Experience	Similar Years Work Experience
1	Project Manager	BE Instrumentation/ Electronics/ Electrical/Mechanical Engineering or Equivalent	1	10	5
2	Computer Engineer (SCADA)	BE(CS or IT) /MCA	2	5	3

3	Site Engineer	Diploma in Instrumentation/ Electronics/ Electrical /Information Technology/Mechanical Engineering	3	5	3
4	Supervisors	12th pass with PCM	3	5	3
5	Electricians	ITI in Instrumentation/ Electronics/ Electrical	4	5	2
6	Pump Concessionaire staff Per Shift	ITI in Mechanical/Electrical	18	3	2
7	Pump machinery maintenance staff	ITI in Mechanical/Electrical	4	8	5

The operative staff shall be suitably skilled as per the requirement of job.

The contractor will provide sufficient technical labour/ staff for the smooth working of the operation and maintenance of Various Pump Houses and Bore wells of Dehradun City Pump House including maintenance of Mechanical, Electrical installations.

All the supervisory staff and technical labor engaged by the contractor for the O&M of this project should fulfill the requirement of scope of work and technical specifications to the satisfaction of Engineer in Charge and shall be available at all the times and to be sanctioned at established office/ camp office of the contractor.

The contractor shall employ for the execution of work only such persons who are skilled and experienced in all related activities required as per good engineering practices and for the completion of the works, from reconnaissance, design, procurement, testing, installation & commissioning and O & M of pump sets, electrical equipment & rising pipe. The Engineer in Charge shall be at liberty to object to and require the contractor to remove from the work any person who in the opinion of the Engineer in charge misconducts himself or is incompetent or negligent in the proper performance of his duties. Such person shall not again be employed without permission of the Engineer in Charge.

Contractor may terminate/Remove any staff from the work but arrangement of alternate qualified staff shall be made under intimation of the UJS.

Note: - The list of the Technical persons as mentioned above is tentative. Engineer of the project nominated from DSCL may modify the above list of the Technical persons as per the project requirements.

2.1 Equipment's

2.1.1 List of minimum key equipment's to be deployed for Work (Electrical/ Infrastructure works)

Sl. No.	List of Equipment	Minimum required	Capacity	Available	Own/ Lease
	During Execution				

1	Automated software for testing of Modules	1 set			
2	Testing kit for RTU	2 set			
3	Milli volt / milli ampere calibrator (loop calibrator)	1 set			
4	Crimping Tool	2 set			
5	Rheostat	2 set			
6	Tools - Hacksaw - File - Spanner - Blade - Screw and spanner set drivers - Piler - Wire Stripper - Twiser - Hammer - Punch - Hand tap - Drill bit - Nose plier Magnifying Glass	2 set			
7	Packing tools	2 set			
8	All tools related to instruments/ water Quality Sensors etc.	5 set			

Note: - The list of the equipment and plants as mentioned above are tentative. Engineer of the project nominated from DSCL may modify the above list of the equipments as per the project requirements. It is Preferred that the bidder submit the List of Electrical T & P also.

Note: The required format provided in the bid document should be filled for all the equipment mentioned above

SECTION 1.3

BIDDING FORMS

Note: Each filled form should contain the Project Name and RFP Ref No.

Letter of Technical Bid

Ref No._____ Date of Bid submission: _____
RFP No.: _____

To: The Chief Executive Officer,
Dehradun Smart City Limited,
777, Saatvik Tower, Rajender Nagar,
Kaulagarh Road, Dehradun-248001, Uttarakhand

We, the undersigned, declare that:

We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB-8);

We offer to execute works in conformity with the Bidding Documents the following Work/s: _____.
Our bid shall be valid for a period of 180 days from the bid submission due date in accordance with the bidding documents, and it shall remain binding up on us and may be accepted at any time before the expiration of that period;

If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 3.3;

We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB3.3,

Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible by Government of Uttarakhand (GoUK)/ Government of India (GoI) or any of its undertakings/ Other UJSs any State Government, any public sector unit or any Local Body.

We are not a government owned entity / We are a government owned entity but meet the requirements of ITB 3.5;*

We understand that this bid, together with your written acceptance thereof included in your letter of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.

We agree to permit Dehradun Smart City Limited or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by Dehradun Smart City Limited or Government of India.

Name.....
In the capacity of.....
Signed.....
Duly authorized to sign the Bid for and on behalf of.....
Date.....

Forms for Personnel

Form PER – 1: Proposed Personnel

Bidders should provide the names and details of the suitably qualified Personnel to meet the requirement specified in section 3 (Evaluation and Qualification Criteria) using the Form below for each candidate.

Sr. No.	Name of the Personnel	Proposed Position

Form PER – 2: Resume of Proposed Personnel

(The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation)

Position*		
Personnel information	Name:	Date of birth:
	Professional qualifications:	
	Experience (No of years) :	
Present employment	Name of employer:	
	Address of employer:	
	Telephone:	Contact (manager / personnel officer):
	Fax:	E-mail:
	Job title:	Years with present employer:

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From*	To*	Company	Position	Relevant Technical and Management Experience

Forms for Equipment

The Bidder shall provide adequate Information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed In Section III (Evaluation and Qualification Criteria). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Type of Equipment*		
Equipment Information	Name of manufacturer,	Model and power rating
	Capacity	Year of manufacture
Current Status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Site Organization
[Insert Site Organization Information]

Method statement

[Insert method Statement – A detailed note should be submitted outlining bidders proposed methodology and program of construction including Environmental and Social Management Plan, backed with equipment, materials and manpower planning and deployment, duly supported with broad calculations and quality control system/assurance procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated review of completion as per mile stones]

Mobilization Schedule

[Insert Mobilization Schedule]

Construction/Installation Schedule

[Insert Construction Schedule in MS-Project/Primavera]

Bidder's Qualification

To establish its qualifications to perform the contract in accordance with Section III (Evaluation and Qualification Criteria) the Bidder shall provide the Information requested in the corresponding Information Sheets Included here under

Form ELI-1: Bidder's Information

Bidder's legal name	
In case of JV, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	

Attached are copies of the following original documents.

1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 3.1 and 3.2.
2. In case of a government-owned entity, any additional documents not covered under 1 above required to comply with ITB 3.5.
3. Authorization to represent the firm or JV named in above, in accordance with ITB 20.2.
4. In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1.
5. Attached Copy of PAN CARD issued by income tax Department with copy of income tax returns for the last three FY
6. Attached Copy of GST Registration Certificate
7. Attached Copy of Incorporation Certificate

Form EL -2: Information for JV Bidders

Bidder's legal name	
JV Partner's or Subcontractor's legal name	
JV Partner's or Subcontractor's country of constitution	
JV Partner's or Subcontractor's year of constitution	
JV Partner's or Subcontractor's legal address in country of constitution	
JV Partner's or Subcontractor's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents. 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. 2. Authorization to represent the firm named above, in accordance with ITB 20.2. 3. In the case of government-owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5.	

Form LIT-1- Pending Litigation

Information on litigation history in which the bidder is involved. (Each Bidder or member of a JV must fill in this form)

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
Year	Non-performed portion of contract	Contract Identification	Total Contract Amount (Rs)
[Insert year]	[Insert amount and percentage]	Contract identification: [Indicate complete contract name/ number, and any other identification] Name of Employer: [Insert full name] Address of Employer: [Insert street/city/country] Reason(s) for nonperformance: [Indicate maIn reason(s)]	[Insert amount]
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
☐ No pending litigation in accordance with Section III, Evaluation and Qualification Criteria. ☐ Pending litigation In accordance with Section III, Evaluation and Qualification Criteria.			

Year of dispute	Amount In dispute (INR)	Contract Identification	Total Contract Amount (INR)
		Contract Identification: _____ Name of Employer: _____ Address of Employer: _____ Matter In dispute: _____ Party who Initiated the dispute: ____ Status of dispute: _____	
		Contract Identification: Name of Employer: Address of Employer: Matter In dispute: Party who Initiated the dispute: Status of dispute:	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
☐ No Litigation History In accordance with Section III, Evaluation and Qualification Criteria ☐ Litigation History in accordance with Section III, Evaluation and Qualification Criteria, as indicated below.			
Year of award	Outcome as percentage of Net Worth	Contract Identification	Total Contract Amount (INR)

[Insert year]	[Insert percentage]	Contract Identification: [Indicate complete contract name, number, and any other identification] Name of Employer: [Insert full name] Address of Employer: [Insert street/city/country] Matter In dispute: [Indicate main issues In dispute] Party who Initiated the dispute: [Indicate "Employer" or "Contractor"] Reason(s) for Litigation and award decision [Indicate main reason(s)]	[Insert amount]

Form FIN – 1: Financial Situation and Performance
(Each Bidder or member of a JV must fill in this form)

Information from Balance Sheet			
	2018-19	2017-18	2016-17
Total Assets (TA)			
Total Liabilities (TL)			
Net Worth (NW)			
Current Assets (CA)			
Current Liabilities (CL)			
Working Capital (WC)			
Total Revenue (TR)			
Profits Before Taxes (PBT)			
Profits After Taxes (PAT)			
Cash Flow from Operating Activities			

Note: The figures filled by the bidder in the above format should also be certified by the Chartered Accountant.

☐ Attached are copies of financial statements for the last three years required above; and complying with the requirements (Last three years legible audited financial statements (Balance sheets and Profit and Loss Accounts) including enclosures/annexures/ schedules/attachments/appendix). Audit report is also attached.

Form FIN - 2: Annual Turnover
(Each Bidder or member of a JV must fill in this form)

Annual turnover data	
Year	Amount in INR
2018-19	
2017-18	
2016-17	
2015-16	
2014-15	

Annual turnover calculated as total certified payments received for work In progress or completed, for last three years(2014-15,2015-16,2016-17,2017-18, 2018-19) of the Bidder and should be certified by a Chartered Accountant.

Form FIN – 3: Financial Resources

(Each Bidder or member of a JV must fill in this form)

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified In Section III, Evaluation and Qualification Criteria.

Source of Financing	Amount (Rs)
1.	
2.	
3.	
4.	

Form FIN 4: Existing commitments and on-going works

(Each Bidder or member of a JV must fill in this form)

Bidder should provide Information on their current commitments on all contracts that have been awarded, or for which a letter of Intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

(A) Existing commitments and on-going works:

Description of work	Employer Contact details (Address, Tel, Fax, Email)	Value of Contract (In INR)	Stipulated Period of Completion	Value Of Works* Remaining To Be Completed (In INR.) (A)	Anticipated Date of Completion	Remaining Contract Period in Months (B)	Monthly Financial Requirement (A/B)
Cumulative Financial Resources Requirement for Existing Commitment							INR…… ……..

(B) Works for which bids already submitted and likely to be awarded/ expected additional commitment.

Description of works	Employer Contact details (Address, Tel, Fax, Email)	Estimated Value of works (In INR)	Stipulated Period of Completion	Date when decision is expected	Remarks, if any

Form EXP – 2 (a): Specific SCADA & ESCO Experience
[The following table shall be filled in for contracts performed by the Applicant]

Similar Contract No.	Information			
Contract Identification				
Award date				
Completion date				
Role of contractor	Prime Contractor	Member In JV	Management Contractor	Sub-contractor
Total Contract Amount			INR	
If member In a JV or subcontractor, specify participation In total Contract amount			INR	
Employer's Name:				
Address: Telephone/fax number E-mail:				

Note:
Attached are completion certificates from the competent authority not less than the rank of Executive Engineer of any State /Central government Department/Corporation or, in case of manufacturer, form the Prime Contractor to whom the equipment were supplied for the works of such authorities.

Form of Bid Security, Bank Guarantee

.....Bank's Name, and Address of Issuing Branch or Office.....
Beneficiary: ..... Name and Address of Employer.....

Date:.....
.....

Bid Security No.:
We have been informed that . . . . . name of the Bidder (hereinafter called "the Bidder") has submitted to you its bid dated . . . . . (Hereinafter called "the Bid") for the execution of.....name of contract.....under Invitation for Bid No.....("the IFB").
Furthermore, we understand that, according to your conditions, Bid must be supported by a bid guarantee.

At the request of the Bidder, we . . . . . name of Bank hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of amount in figures. …….. (.....amount in words) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or

does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB");or

Having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

. . . . . Bank's seal and authorized signature(s) . . . . . .
Note: All italicized text is for use in preparing this form and shall be deleted from the final document

Format for Declaration by the bidder for not being Blacklisted / Debarred

(Each Bidder or member of a JV must fill in this form)

(To be submitted on the Letterhead of the bidder)

Date: dd/mm/yyyy

To: The Chief Executive Officer,
Dehradun Smart City Limited,
777, Saatvik Tower, Rajender Nagar,
Kaulagarh Road, Dehradun-248001, Uttarakhand

Subject: Request for Proposal for Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years
AND
Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City under "Smart City Mission"
.
RFP Reference No:

Dear Sir/ Ma'am,

I, authorized representative of _____, hereby solemnly confirm that the _____ ("Successful bidder") is not debarred/ black -listed by Central Government/ any State Government/ Public Sector Undertaking in India or similar agencies globally for unsatisfactory past performance, corrupt, fraudulent or any other unethical business practices or for any other reason as on last date of submission of the bid.

In the event of any deviation from the factual information/ declaration, DEHRADUN SMART CITY LIMITED reserves the right to reject the bid or terminate the Contract without any compensation to the Company.

Thanking you,
Yours faithfully,

_____ _____
Signature of Authorized Signatory (with official seal)

Date:
Name:
Designation:
Address:
Telephone & Fax: E-mail address:

Format of sending pre-bid queries at agmproc-dscl@uk.gov.in

RFP Reference No:

Bidder's Request For Clarification				
Name and complete official address of Organization submitting query/request for clarification			Telephone, Fax and E-mail of the organization Tel: Fax: Email:	
S. No.	Clause No.	Page No.	Content Of RFP Requiring Clarification	Change Requested/ Clarification required
1				
2				

Signature:
Name of the Authorized signatory:
Company seal:
Date and Stamped

Note: Bidder(s) are requested to send the queries in PDF with Sign and Company Seal and also in MS Excel/word for making consolidation process easy.

Format for Power of Attorney

(On a non-judicial stamp paper of appropriate value duly attested by notary public)

Know all men by these presents, we (name and address of the registered office of the Sole Applicant) do hereby constitute, appoint and authorize Mr./Ms._____R/o _____ who is presently employed with us and holding the position of_____, to do in our name and on our behalf, all such acts, deeds and things, necessary in connection with or incidental to the bid for Request for Proposal for _____ including signing and submission of all documents and providing information/ responses to DEHRADUN SMART CITY LIMITED and representing us in all matters in connection with our bid for the said Project.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

For (Signature)

(Name, Title and Address)

Accept

…… (Signature)

(Name, Title and Address of the Attorney)

Notes:

To be executed by the Applicant.
The mode of execution of Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants (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 executants (s) should submit for verification the extract of the charter documents and documents such as a resolution/ Power of attorney in favor of the Person executing this Power of Attorney for the delegation of power hereunder on behalf of the bidder.

FORMAT FOR AFFIDAVIT FOR CORRECTNESS OF BID

(To be given by the Bidder on non-judicial Stamp Paper of Rs. 100/-)
I.……..……..... S/o ……..……..……..., Resident of the ……..……,
…….... (Insert designation) of the ……..….... (Insert name of the Bidder), do solemnly affirm and state as under:

1. That I am the authorized signatory of ……..(insert name of company) (hereinafter referred to as "Bidder") and I am duly authorized by the Board of Directors of the Bidder to swear and depose this Affidavit on behalf of the bidder.

2. That I have submitted information with respect to our eligibility for the "_____(hereinafter referred to as "Project") and I further state that all the said information submitted by us is accurate, true and correct and is based on our records available with us.

3. That I hereby affirm to furnish any information, which may be requested by Authority to verify our credentials/information provided by us under this Bid and as may be deemed necessary by Authority.

4. That if any point of time till the completion of all the contractual obligations, in case Authority requests any further/additional information regarding our financial and/or technical capabilities, or any other relevant information, I shall promptly and immediately make available such information accurately and correctly to the satisfaction of Authority.

5. That I fully acknowledge and understand that furnishing of any false or misleading information by us in Bid shall entitle us to be disqualified from the tendering process for the said Project. The costs and risks for such disqualification shall be entirely borne by us.

6. That, we fully acknowledge and understand that in case any false or misleading information, as furnished by us in our Bid, is found at a later stage after the signing of the Contract Agreement amongst Authority and …….. (Insert name of organization), it shall entitle DSCL to terminate the said signed Contract Agreement between the Parties. The costs and risks for such termination shall be entirely borne by us.

7. That all the terms and conditions of the Tender Document have been duly complied with.

VERIFICATION:
I, the above named deponent, do verify that the contents of points 1 to 7 of this affidavit are true and correct to my knowledge. No part of it is false and nothing material has been concealed.
Verified at ……, on this ……. day of…….…….., 2019.

Checklist for Technical & Financial Bid

S. No.	Particulars	Yes/No	If Yes, Page No.
1	RFP Document Fees		
2	Bid Security/EMD		
3	Affidavit of Correctness of Bid		
4	Power of Attorney		
5	Undertaking to the effect that the company has not been black-listed(duly notarized)		
6	Copy of PAN CARD issued by income tax UJS with copy of income tax returns for the last three FY		
7	Copy of GST Registration Certificate		
8	Copy of Incorporation Certificate		
9	Letter of Technical Bid		
10	Form PER-1 for Personnel		
11	Form PER-2 for Personnel		
12	Form for Equipment		
13	Site Organization		
14	Method Statement		
15	Mobilization Schedule		
16	Construction Schedule		
17	Form ELI-1: Bidders Information		
18	Form LIT-1: Pending Litigation		
19	Form FIN-1: Financial Situation and Performance		
20	Form FIN-2: Average Annual Turnover		
21	Form FIN-3: Source of Financial Resource		
22	Form FIN-4: Existing Commitments & Ongoing Works		
23	Form EXP-1: SCADA Experience		
24	Form EXP-2: ESCO Experience		
25	Letter of Price Bid		
26	Audited Balance Sheets for the last five FY		
27	Any other relevant document		

SECTION II

DRAFT TRI-PARTITE AGREEMENT
FOR
Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years
AND
Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years
in Dehradun City under "Smart City Mission"

(To be executed on stamp paper of Rs. 100)

Tri-partite Agreement between ESCO, Dehradun Smart City Limited and Uttarakhand Jal Sansthan for Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years AND
Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City under "Smart City Mission"

This Tri-partite Agreement (the **"Tri-partite Agreement")** is made and executed on the ------day of ----- YYYY, at Dehradun in the State of Uttarakhand

BY AND AMONGST:

The Chief Executive Officer of Dehradun Smart City, Government of Uttarakhand having its office at 777, Saatvik Tower, Rajender Nagar, Kaulagarh Road, Dehradun, 248001, Uttarakhand,(hereinafter referred to as "DSCL", which expression shall unless repugnant to the context thereof,
include his successors and assigns), of the **FIRST PARTY**;

AND

Uttarakhand Jal Sansthan (Water Supply Department of Uttarakhnad Government) with its registered office at ----------(hereafter referred to as "UJS", which expression shall, unless repugnant to the context or meaning thereof, include its permitted assigns and substitutes) of the **SECOND PARTY;**

AND

Energy Services Company ----------, a company incorporated under the provisions of the Companies Act, 1956 as a JV of ----------, with its registered office at ----------corporate office at---------- (hereinafter referred to as "CONCESSIONAIRE ", which expression shall, unless repugnant to the context or meaning thereof, include its Successors, permitted assigns and
Substitutes) of the **THIRD PARTY,**

Hereinafter, DSCL, UJS and ESCO are individually referred to as a Party and collectively referred to as the Parties.

1.0 Background

1.1. Energy saved sharing Model (ESCO Project) is a particular form of contracting arrangement used in energy consumption-intensive industries or infrastructure services, like pumping water supply, where the ESCO Contractor is made responsible for all the activities and has to quote prices of Services, considering the Compulsory Saving and over & above this the Expected Saving in the

energy bill for all pumping stations & tube wells and the entire Compulsory Saving and part of Expected Saving amount to be shared with authority during “ESCO Operation and maintenance Period”. On completion of “ESCO Operation and Maintenance Period” the contractor shall handover the project to the End-User or Owner

1.2. State Level Technical Committee (SLTC) of Uttarakhand Government has approved the ESCO Model Project.

1.3. DSCL and the UJS wishes to implement the findings of the approved ESCO Project by entering into this Tri-partite Agreement for implementation of Energy saved sharing Model (ESCO Project)

1.4. NOW THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Tri-partite Agreement, the sufficiency and adequacy of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

2.0 Definitions and Interpretation

Unless the context otherwise requires, the definitions and interpretations in Section 2.1, General Condition of Contract, Clause 1&2 (Definition and Interpretation) shall apply.

3.0 Effective Date and Term of the Tri-Partite Agreement

3.1 This Tri-partite Agreement shall come into force and effect on the date of execution of this Tri-partite Agreement by all the Parties (hereinafter referred to as "Effective Date").

3.2 Unless terminated earlier by either Party in accordance with the Section 2, General condition of Contract & Special Condition of Contract of this Tri-partite Agreement, this agreement shall continue in full force and effect until all obligations of the Parties in relation to the Implementation Project have been fulfilled, discharged and/or waived, or eleven years whichever is earlier (hereinafter referred to as "Term of the Tri-partite Agreement").

3.3 The "Commissioning Date" is the date on which the replacement of all replaceable old pump sets, as mentioned in scope of work, section 2, clause 18 in a particular pumping station/ pumping house gets completed.

3.4. The "Completion Date" is the date on which the replacement of all replaceable pumps sets (in all respects) as mentioned in the scope of work, section 2 clause 18

4.0 SCOPE OF THE TRI-PARTITE AGREEMENT

4.1 Implementation Project Title

The Implementation Project shall be known as Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years AND
Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City
Under "Smart City Mission"

4.2 Implementation of Project Scope

The Parties agree that the key activities mentioned in 2.1, General Condition Of Contract, Section 2.2, Particular Condition of Contract and Section 2.3, Special Condition of Contract & Section 3, Project Information Memorandum shall be scope of the Implementation Project & Conditions of implementation of the Project and the Parties shall work together to complete the activities through mutual co-operation and support:

4.3 Ownership, Rights and Title of EEPS

4.3.1 The ownership and title of the Energy Efficient Pumping Stations (EEPS) installed/remodeled/retrofitted by ESCO …… shall vest with ESCO…….till the Term of the Agreement. However, the rights for use and operation shall vest with the UJS during the agreement period. The ownership and title of the EEPS installed shall be transferred in all respect to UJS by the ESCO…… ……. before expiry of the agreement period.

4.3.2 Technical Specifications of EEPS and Service Level Agreements are in accordance with Section 3.2 Technical Specification.

5.0 DUTIES, RESPONSIBILITIES AND OBLIGATIONS OF THE PARTIES

The Parties agree that the Duties, Responsibility and Obligations of the Parties mentioned in Section 2.1, General Condition Of Contract, Section 2.2, Particular Condition of Contract and Section 2.3, Special Condition of Contract to complete the activities through mutual co-operation and support.

6.0 NOTICES

Notices, demands or other communication required to be given under this Tripartite Agreement shall be in writing and delivered personally or sent by prepaid registered post with recorded delivery, addressed to the intended recipient at its address set forth below, or to such other address as either Party may from time to time duly notify to the other:

If to DSCL:
Kind attention: Chief Executive Officer
Address: 777, Saatvik Tower, Rajender Nagar, Kaulagarh Road, Dehradun, 248001, Uttarakhand, India
Ph. No.: 0135-270894
Fax No.: 0135-2750817
Email: smartcityddn@gmail.com

If to ESCO……..:
Kind attention: Managing Director
Address: ……
……..
Ph. No,: +91 …….
Fax No.: +91 ……
Email: …….

If to UJS:
Kind attention: Chief General Manager
Address: Jal Bhawan, Nehru Colony, Dehradun
Ph. No,: +91135-2671658
Fax No.: +91 ……
Email: cgm-js-ua@nic.in

A notice shall be deemed to have been received, if sent by fax on the working day next following a successful transmission as evidenced by the telefax confirmation sheet of the sender or, if delivered or sent by registered mail with return receipt to have been delivered and received on the date of such delivery.

IN WITNESS WHEREOF, the Parties have entered into this Tri-partite Agreement on the day and year first above written.

For and on behalf of Energy Efficiency Services Company	For and on behalf of UJS	For and on behalf of DSCL
Name ---------- Designation ----------	Name ---------- Designation ----------	Name ---------- Designation ----------

Witnesses:
1.

2.

3.

Section 2.1 - General Conditions of Contract

The Conditions of Contract, read in conjunction with Section 2.2, Particular Conditions of Contract, & Section 2.3, Special Condition of Contract and other documents listed therein, should be a complete document expressing fairly the rights and obligations of both parties.

The form of Draft Concession Agreement that follows has been developed for smaller measurements contracts for construction on the basis of the practice of the Government of India, and considerable experience in different States in India in the drafting and management of contracts, bearing in mind a trend in the construction industry towards simpler, more straightforward language.

General Conditions of Contract

i. General

In this Agreement, unless it be repugnant to the context herein or the subject otherwise requires, these words and expressions defined below shall have the meanings assigned to them:

1. Definitions	(a) The **Accepted Contract Amount** shall mean and include the amount accepted in the Letter of Acceptance/Award for the execution and completion of the works and remedying any defects in accordance with the terms of the Agreement. (b) **"Applicable Laws"** shall mean and include all laws which are applicable to the Project and/or to the Contractor extending to the State of Uttarakhand, having been enacted or brought into force by Government of India or Government of Uttarakhand including, notifications, orders, instruments, regulations and rules made thereunder and judgments, decrees, injunctions, writs and orders of any Court or Tribunal or Authority or Forum, as for the time being in force during the subsistence of this RFP. (c) **Bill of Quantities** shall mean and include the priced and completed Bill of Quantities forming part of the Bid. (d) **Baseline Energy Consumption:** The contractor, after performance study of each pumping station, shall prepare the base line performance of all pumping stations in terms of specific energy consumption (SEC) (i.e. kWh/kL). After preparation of Pumping Station wise baseline, contractor shall submit report to Authority and same shall be approved by the Authority. This approved Pumping Station wise Baseline shall be called Baseline Energy Consumption. (e) **Baseline Energy Consumption Bill Amount:** Means the amount of bill for baseline energy consumption arrived at the electricity power tariff rate of UPCL, of the period **in which Energy Consumption is considered**. Baseline Energy Consumption Bill Amount = Baseline Energy Consumption. X electricity power tariff rate "UPCL" of the period in which Energy Consumption is considered (f) **Compensation Events** shall mean and include those defined in the Clause 42 of the GCC. (g) The **Competent Authority** shall mean and include the DSCL or its Chief Executive Officer or the Additional Chief Executive Officer or anybody or committee or entity constituted or any person or entity or body or committee delegated with specified limited power for specific limited purpose by the Chief Executive Officer of the employer. (h) The **Completion Date** shall mean and include the date of completion

	of the works as certified and declared by the DSCL or 12 months for Installation/construction work period from the date of signing of contract, whichever is later, in addition to and 10 years for operation and maintenance after the expiry of such Installation/construction work period. (i) The **Contract** shall mean this Contract Agreement, between the Employer and the Contractor to execute, complete and maintain the works and the documents listed in sub-clause 2.3 of the GCC. (j) The **Contractor** shall mean the party whose bid to carry out the works has been accepted by the Employer and the men, agents, servants, directors, managers, consultants, sub-consultants, officers, staffs of the party whose bid has been accepted by the employer. (k) The **Contractor's Bid** shall mean and include the completed bidding documents submitted by the Contractor to the Employer. (l) The **Contract Price** shall mean and include the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract. (m) **Days** are calendar days; **months** are calendar months. (n) **Defect** shall mean and include any part of the works not completed or not performed or not done in accordance with the contract. (o) The **Defects Liability Certificate** shall mean and include the certificate issued by Employer, after the Defect Liability Period has ended and upon correction of defects by the Contractor after the expiry of the Completion date. (p) The **Defects Liability Period** shall mean and include the date on which the Defects Liability Certificate. (q) **Drawings** shall mean and include the drawings of the works but not limited to the Contract, and any additional and modified drawings issued by or on behalf of the Employer in accordance with the Contract or instruction of the Competent Authority in writing or the Engineer-In-Charge and shall be deemed to include the figures, calculations, other information, facts, images, representations, graphical or otherwise provided or approved for the execution of the Contract. (r) **"DSCL"** shall mean and Dehradun Smart City Limited. (s) The **Employer** shall mean Dehradun Smart City Limited or DSCL and any of its officer, men, agents, servants, directors, managers, consultant and sub consultant as has been referred throughout this document.

(t) **Engineer/Engineer in Charge** shall mean the person appointed by the Employer and responsible for supervising the execution of the Works and administering the Contract and all acts incidental as well as consequential for the proper execution of the work for which he is appointed by the employer in accordance with the terms and conditions of such appointment and who shall be treated as the Engineer-In-Charge (E in C) for the purposes of this project.

(u) **Equipment** shall mean Contractor's machinery and vehicles brought temporarily to the Site work.

(v) **"Force Majeure"** or **"Force Majeure Event"** shall mean acts, events, conditions and/or occurrences as specified in the GCC 61.

(w) "**In writing**" or "written" shall mean hand-written, type-written, printed or electronically made, resulting in a permanent record;

(x) The **Initial Contract Price** shall mean the Contract Price listed In the Employer's Letter of Acceptance/Award.

(y) The **Intended Completion Date** shall mean the date on which it is agreed by the parties that the Contractor shall complete the works as per **PCC** including date approved by the Engineer-in charge by issuing an extension of time or an acceleration order in writing.

(z) **Materials** shall mean all supplies, including consumables, used by the Contractor for incorporation in the work.

(aa) The **Particular Condition of Contract** shall mean the documents and other information, which comprise the Contract, specifying.

(bb) **Plant** shall mean any integral part of the work that shall have equipment's, mechanical, electrical, chemical, function, tools, machineries and shall include site area, land area where such things are lying and operating.

(cc) **PMC shall mean** the project management consultant appointed by Employer for the job as the agreement between the employer and the PMC .The objective of PMC is specified in GCC63.

(dd) **"RFP" shall mean** Request for Proposal document issued by DSCL, including all **"Tender Documents"** and "**Bidding Documents"**.

(ee) The **Site** shall mean the area defined as such in the PCC.

(ff) **Site Investigation Reports** shall mean those that were included in

	the bidding document and are factual and Interpretative reports about the surface and subsurface conditions at the Site. (gg) **Specification** shall mean the specification of the works included in the Contract and any modification or addition made or approved by the Engineer-in charge the Competent Authority, as the case may be. (hh) The **Start Date** shall mean date given in the PCC which shall be latest date by when the Contractor shall commence execution of the works. (ii) **Subcontractor** shall mean a person or corporate body who has a Contract with the Contractor to carry out a part of the work In the Contract, which Includes work on the Site. (jj) **"Tax"** shall mean all tax, duty, and levy, charge whatsoever charged, imposed or levied under Applicable Laws. Payable/ leviable in respect of the said Project. (kk) **Temporary Works** shall mean works designed, constructed, installed, and removed by the Contractor that are needed for construction or Installation of the works. (ll) **"Tender/ Bid/"** shall means the Contractor's quoted Technical and/or Financial Proposal and detailed Proposal for the Project, including the Contractor's Proposal, submitted to the Employer and as accepted by the ultimately Employer. (mm) **"Termination Date"** shall mean the date on which this Contract Agreement terminates by efflux of time or by issuance of a Termination Notice. (nn) **"Termination Notice"** shall mean the communication received issued in accordance with this Contract Agreement by a Party to the other Party for terminating this Contract Agreement. (oo) **"Termination Payment"** shall mean the amount payable by the Employer to the Contractor upon the termination of this Contract Agreement. (pp) "**Third Party**" shall mean any Person, real or judicial, or entity other than the Parties to this Contract Agreement. (qq) **"Transfer Date"** shall mean the day immediately following the last day of the Contract Period, including any extensions thereto or earlier termination thereof in accordance with the terms of the Concession Agreement.

	(rr) **"UJS"** shall mean Uttarakhand Jal Sansthan, a drinking water supply department of Government of Uttarakhand and any of its officer, men, agents, servants, directors, managers, consultant and sub consultant as has been referred throughout this document. (ss) **"Variation"** shall mean a modification, improvement or change in the works, services, and facilities etc to be carried out by the Contractor, such that the cost of implementing the modification, improvement or change can be recovered through a 30-day adjustment of the Contract Period. **"**Works" shall mean the Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years AND Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years and all the appurtenances thereof, including any other permanent, temporary or urgent works required to be done for proper execution of this Agreement. (tt) " **Parties**: DSCL/Employer and Contractor hereinafter individually shall be referred to as a 'Party' and collectively as 'Parties' "
2. Interpretation	2.1 In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer shall provide Instructions clarifying queries about these GCC. 2.2 If sectional completion is **specified In the PCC**, references In the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works). 2.3 The documents forming the Contract shall be Interpreted In the following order of priority: (a) Tri-partite Agreement (b) Letter of Award, (c) Contractor's Bid & Original Price Bid BOQ, (d) General Conditions of Contract, (e) Particular Conditions of Contract, (f) Special Conditions of Contract,

	(g) Specifications, (h) Drawings (if applicable), (i) Any other document **listed In the PCC** as forming part of the Contract.
3. Language and Law	3.1 The language of the Contract and the law governing the Contract are **stated In the PCC**.
4. Engineer's Decisions	4.1 Except where otherwise specifically stated, the Engineer shall decide contractual matters between the Employer and the Contractor In the role representing the Employer.
5. Delegation	5.1 Unless otherwise **specified In the PCC,** the Engineer may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor.
6. Communications	6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered
7. Subcontracting	7.1 The contractor may subcontract part of the construction work with the approval of the Employer in writing, upto 25% of the contract price but will not assign the Contract. Subcontracting shall not alter the contractor's obligations. 7.2 Beyond what has been stated in clauses 7.1, if the contractor proposes sub-contracting any part of the work during execution of the works, because of some unforeseen circumstances to enable him to complete the work as per terms of the contract, the Employer will consider the following before according approval: i.The Contractor shall not sub-contract the whole of the works. ii.The Contractor shall not sub-contract any part of the work without prior Consent of the Employer. Any such consent shall not relieve the contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults and neglects of any his sub-contractor, his agents or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents and workmen. 7.3 The Engineer should satisfy himself before recommending to the Employer whether a.The circumstances warrant such sub-contracting: and b. The sub-contractor so proposed for the work possess the experience, qualification and equipment necessary for the job proposed to be entrusted to him in proportion the Quantum of works to be sub- contracted.

8. Other Contractors	8.1 The contractor shall co-operate and share the site with other contractors. Public authority's utilities and the employer between the dates given in the schedule of other contractors, as referred to in the PCC. The contractor shall also provide facilities and services for them as described in the schedule. The employer may modify the schedule of other contractor, and shall notify the contractor of any such modification.
9. Personnel	9.1 The Contractor shall employ for the construction work and routine maintenance the technical personnel named in the Section 3 or other technical persons approved by the Engineer. The Engineer will approve any proposed replacement of technical personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel stated in the Section 3 . 9.2 If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the Works in the Contract. 9.3 The Contractor shall not employ any retired Gazetted officer who has worked in the Engineering UJS of the State Government and has either not completed two years after the date of retirement or has not obtained State Government's permission to employment with the Contractor
10. Employer's and Contractor's Risks	10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.
11. Employer's Risks	11.1 The Employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works in the Employer's country, the risks of war, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), natural calamities and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or (b) a cause due solely to the design of the Works, other than the Contractor's design.
12. Contractor's Risks	12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks, referred to in clause 11.1, are the responsibility of the Contractor.
13. Insurance	13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, Insurance cover from the Start Date to the end of the complete contractual obligations including the O&M Period. In the amounts and deductibles **stated In the PCC** for the following events which are due to the Contractor's risks: (a) loss of or damage to the Works, Plant, and Materials [which are Incorporated In works];

	(b) loss of or damage to Instruments & Equipment; (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) In connection with the Contract; and (d) Personal Injury or death. 13.2 Policies and certificates for Insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start Date. All such Insurance shall provide for compensation to be payable In Indian Rupees required to rectify the loss or damage Incurred. 13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may affect the Insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due. 13.4 Alterations to the terms of an Insurance shall not be made without the approval of the Engineer. 13.5 Both parties shall comply with any conditions of the Insurance policies.
14. Site Data	14.1 The Contractor shall be deemed to have examined any Site Data **referred to In the PCC**, supplemented by any Information available to the Contractor.
15. Queries about the PCC	15.1 The Engineer will clarify queries on the PCC
16. Contractor to Construct the Works	16.1 The Contractor shall construct and Install the Works In accordance with the Specifications and Scope of Work and as per Instructions of Engineer. 16.2 The contractor shall construct the works with intermediate technology, i.e., by manual means with medium input of machinery required to ensure the quality of works as per specifications. The contactor shall deploy the equipment and machinery as given in Section 3.
17. The Works to Be Completed by the intended Completion Date	17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works In accordance with the Program submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion Date.
18. Approval by the Engineer	18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Engineer, for his approval. 18.2 The Contractor shall be responsible for design of Temporary Works.

	18.3 The Engineer's approval shall not alter the Contractor's responsibility for design of the Temporary Works. 18.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required. 18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Engineer before this use.
19. Safety	19.1 The Contractor shall be responsible for the safety of all activities on the Site specified in the Annexure -1 Clause C5.
20. Discoveries	20.1 Anything of historical or other Interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Engineer of such discoveries and carry out the Engineer's Instructions for dealing with them.
21. Possession of the Site	21.1 The Employer shall handover complete or part possession of the site to the Contractor 7 days in advance of construction program. At the start of the work, the employer shall handover the possession of at-least 50% of the site.
22 Access to the Site	22.1 The Contractor shall allow the Engineer and any person authorized by the Engineer access to the Site and to any place where work In connection with the Contract is being carried out or is intended to be carried out.
23 Instructions, Inspections and Audits	23.1 The Contractor shall carry out all Instructions of the Engineer which comply with the applicable laws where the Site is located. 23.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and sub-consultants to keep, accurate and systematic accounts and records In respect of the Works In such form and details as will clearly identify relevant time changes and costs.
24 Appointment of the Arbitrator	24.1 The Arbitrator shall be appointed as per the mutual agreement of both the parties.
25 Procedure for Disputes	25.1 If any dispute arises out of this Contract with regard to the interpretation, meaning and breach of the terms of the contract or in the work of operation, the matter shall be tried to be resolved amicably by the parties and in case of failure, the same shall be referred to the Sole Arbitrator to be appointed mutually by the parties, whose decision shall be final and binding on the parties. All arbitration proceedings shall be as per Arbitration and Conciliation Act 1996 with its amendments from time to time. The Seat of Arbitration shall be at Dehradun and the Courts at Dehradun alone shall have jurisdiction to entertain any matter arising out of this agreement/contract."

26 Program	**B. Time Control** 26.1 Within the time stated in the **PCC**, the Contractor shall submit to the Employer for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works and will submit the detailed drawings of the all of work and same shall be reviewed and approved by Engineer of DSCL or through other agency approved by DSCL. 26.2 The Contractor shall submit the list of equipment and machinery being brought to site, the list of key personnel being deployed, the list of machinery/equipment being placed in field laboratory and the location of field laboratory along with the Program. The Engineer-In charge shall cause these details to be verified at each appropriate stage of the program. 26.3 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities. 26.4 The Contractor shall submit to the Employer for approval an updated Program at intervals no longer than the period stated in the **PCC.** If the Contractor does not submit an updated Program within this period, the Employer may withhold the amount stated in the **PCC** from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of a lump sum contract, the Contractor shall provide an updated Activity Schedule within 14 days of being instructed to by the Engineer.
27 Extension of the Intended Completion Date	27.1 The Employer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost. 27.2 The Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Employer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.
28 Delays Ordered by the Engineer	28.1 Engineer may instruct the Contractor to delay the start or progress of any activity within the Works.

29 Management Meetings	29.1 The Engineer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the plans for the Works. 29.2 The Engineer shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.
30 Early Warning	30.1 The Contractor shall warn the Engineer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, Increase the Contract Price, or delay the execution of the Works. The Engineer may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible. 30.2 The Contractor shall cooperate with the Engineer In making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone Involved In the work and In carrying out any resulting Instruction of the Engineer.
	Quality Control
31.Identifying Defects	31.1 The Engineer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.
32. Tests	32.1The Contractor shall provide all apparatus, assistance, documents and other Information, electricity, equipment, fuel, consumables, Instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. 32.2 If the Engineer Instructs the Contractor to carry out a test not specified In the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.
33. Identifying Defects and Correction of Defects	33.1The Engineer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.

	33.2The contractor shall permit the Employer's Technical auditor to check the contractor's work and notify the Engineer and Contractor of any defects that are found. Such a check shall not affect the Contractor's or the Engineer's responsibility as defined In the Contract Agreement. 33.3The Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is **defined In the PCC.** The Defects Liability Period shall be extended for as long as Defects remain to be corrected. 33.4Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Engineer's notice.
34. Uncorrected Defects	34.1 If the Contractor has not corrected a Defect within the time specified In the Engineer's notice, the Engineer shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.
	Cost Control
35. Contract Price	35.1 In the case of an item rate contract (Schedule B), the Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item. 35.2 In the case of a ESCO contract (Schedule A), the Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to monitor and control the performance of activities on which basis the Contractor will be paid as defined in special condition of contract Section VIII.
36 Changes In the Contract Price	36.1 In Schedule B if the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Engineer shall adjust the rate to allow for the change. The Engineer shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 20 percent, except with the prior approval of the Employer.
37 Variations	37.1 In Schedule B the Engineer shall, having regard to the scope of the Works and the sanctioned estimated cost, have power to order, in writing, Variations within the scope of the Works he considers necessary or advisable during the progress of the Works. Such Variations shall form part of the Contract and the Contractor shall carry them out and include them in updated Programs produced by the Contractor. Oral orders of the Engineer for Variations, unless followed by written confirmation, shall not be taken into account.

38 Payments for Variations	38.1 In Schedule B **i**f the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Engineer, the quantity of work is above the limit stated in Sub Cl. 36.1, the rate in the bill of Quantities shall be used to calculate the value of the Variation in accordance with Sub Cl. 36.1. 38.2 In Schedule B **i**f the work in the Variation doesn't correspond to any item description in the Bill of Quantities (i.e. Extra Item), the Contractor shall immediately bring it to the notice of Engineer before the execution of work and shall provide the Engineer, upon asking to do so by him in writing, with a quotation (with detailed breakup of unit rates) for carrying out the Variation. 38.3 In Schedule B the Engineer shall assess the quotation in accordance with the prevailing Schedule of Rates or DSR if the item is not available in SOR or prevailing market rate if the item is not available in both, the SOR and the DSR. The quotation shall be given within seven days of the request or within any longer period as stated by the Employer and before the Variation is ordered. 38.4 In Schedule B **i**f the Contractor's quotation is unreasonable (or if the contractor fails to provide the Engineer with a quotation within a reasonable time specified by the Employer in accordance with Sub Cl. 38.3), the Employer may order the Variation and make a change to the Contract Price which shall be based on the prevailing Schedule of Rates or DSR or market rates in according in the sub clause 38.3. The contract price of such extra item shall be equal to the rate worked out as per this sub-clause if the overall cost of contract is above or equal to the estimated cost and shall be less by the same percentage to which the overall cost of the contract is less than estimated cost as the case may be. Decision of Employer shall be final in this regard.
39 Cash Flow Forecasts	39.1 When the Program, is updated, the Contractor shall provide the Engineer with an updated cash flow forecast.
40 Payment Certificates In Schedule B	40.1 The Contractor shall submit to the Employer monthly statements of the estimated value of the work executed less the cumulative amount certified previously. 40.2 The Engineer shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor. 40.3 The value of work executed shall be determined by the Engineer. The value of work executed shall comprise: 40.4 In the case of a lump sum contract, the value of work executed shall comprise the value of completed activities in the Activity Schedule. 40.5 The value of work executed shall include the valuation of Variations and Compensation Events.

	40.6 The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information
41 Payments in Schedule B	41.1 Payments shall be adjusted for deductions for advance payments security deposit, other recoveries in terms of the Contract and taxes at source, as applicable under the law. The Employer shall pay the Contractor the amounts he had certified within 30 days of the date of each certificate. 41.2 The Employer may appoint another authority, as specified in the PCC (or any other competent person appointed by the Employer and notified to the contractor) to make payment certified by the Engineer. 41.3 Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices In the Contract. 41.4 Payment for Operation and Maintenance period shall be paid in bimonthly installment of the rate quoted by bidder in price bid of Schedule A and term & condition specified in Special condition of contract & Scope of work for Operation & Maintenance period of ten years.
42 Compensation Events	42.1 The following shall be Compensation Events unless they are caused by the Contractor 42.1.1 The Engineer orders a delay or delays exceeding a total of 30days. 42.1.2 The effects on the Contractor of any of the Employer's Risks. 42.2 If a Compensation Event would prevent the Works being completed before the Intended Completion Date, the Intended Completion date shall be extended. The Employer shall decide whether and by how much the Intended Completion Date shall be extended.
43 Tax	43.1 The Engineer shall adjust the Contract Price if taxes, duties, and other levies are changed between the deadline for the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected In the Contract Price.
44 Currencies	44.1 All payments shall be made In Indian Rupees.
45 Price Adjustment	45.1 Not applicable

46 Security Deposit/ Retention and Release of Performance Security and Security Deposit/ Retention.	46.1 The Employer shall retain security deposit of 5% of the amount from each payment of Schedule B due to the Contractor until completion of the whole of the Supply & Installation Work. No retention amount shall be retained from the works of Schedule A in ESCO Mode (Operation & Maintenance of ten years). 46.2 On the completion of the whole of the Supply & Installation Work and completion of operation and maintenance period the total amount retained as Security Deposit is repaid to the contractor when the operation and maintenance of ten year has passed and the Engineer has certified that all defects notified by the Engineer to the contractor before the end of his period have been corrected. The retention amount may be released on submission of equivalent amount of FDR/TDR/BG valid till the completion of the O&M period 46.3 The performance security equal to the five percent of the contract price of contract is repaid to the contractor when the period of eleven years (Supply & Installation and operation and maintenance period) is over and the Engineer has certified that the contractor has satisfactorily carried out the Works. 46.4 If the contractor so desires then the Security Deposit can be converted into any interest bearing security of schedule commercial bank in the name of the Employer or National Saving Certificates duly pledged in favor of the Employer for Defect Liability Period including Operation and Maintenance.
47 Liquidated Damages in Schedule B	47.1 The Contractor shall pay liquidated damages to the Employer at the rate per week or part thereof stated in the PCC for the period that the Completion Date is later than the Intended Completion Date. Liquidated damages at the same rate shall be withheld if the Contractor fails to achieve the milestones prescribed in the PCC. However, in case the Contractor achieves the next milestone the amount of the liquidated damages already withheld shall be restored to the Contractor by adjustment in the next payment certificate. The total amount of liquidated damages shall not exceed the amount defined in the PCC. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's other liabilities. 47.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.
48 Advance Payment in Schedule B	The Employer will make the interest bearing advance payment (if requested by the contractor) to the Contractor (The advance payment shall be repaid with interest @ State Bank of India Prime Lending Rate

	applicable on the date of release of mobilization advance by deducting from payments otherwise due to the Contractor) within 60 days of contract signing as follows: 48.1 This mobilization advance payment up to a maximum of 10% of initial contract price of Schedule-B only shall be paid to the contractor after submission of an unconditional and irrevocable bank guarantee in a form given by the employer and from any scheduled commercial banks or nationalized banks acceptable to the Employer for an amount equal to the advance payment (to be drawn before the end of 20% of the contract period). 48.2 Materials advance shall be paid only for non-perishable items as 75% of the total value of materials brought at site. At any one time materials of not more than 20% value of total BOQ items will be brought at site .After the consumption of the materials brought at site , next lot of materials will be brought. Balance 25% will be paid after successful installation and satisfactory commissioning. 48.3 The Contractor is to use the advance payment only to pay for Nonperishable Materials and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or there documents to the Engineer. The recovery of mobilization advance shall start from bill after the work done exceeds 10% of the initial contract price or **three** months from the date of payment of advance which ever period concludes earlier and shall be made at the rate of 15% of the work done in each IPC (Interim Payment Certificate) The recovery of advance shall be completed when 90% of the work has been completed or prior to the expiry of original time for completion whichever is earlier. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.
49 Securities	49.1 The Performance Security equal to sum of five percent (5%) of the Contract Price of Schedule-B, including additional Performance Security for unbalanced bids if applicable, and ten percent (10%) of one year Guaranteed Energy Saving cost of Schedule-A, valid up to 120 days beyond the date of completion of all the contractual obligations including O&M period of ten years shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in the form given in the PCC and by a Nationalized /scheduled commercial bank.
50 Cost of Repairs	50.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at his cost if the loss or

	damage arises from the Contractor's acts or omissions..
	Finishing the contract
51 Completion of Supply & Installation and Operation and Maintenance	51.1 The contractor shall request the Engineer to issue a certificate of completion of the Supply & Installation of the works, and the Engineer will do so upon deciding that the Supply & Installation works is completed and after successful completion of operation and maintenance period of ten year certificate of operation and maintenance will be issued.
52 Taking Over	52.1 Effective from the Transfer Date or the termination date, whichever is later, the Contractor shall, transfer and assign to the Employer or its nominated agency, as the case may be, free and clear from any charges, liens and encumbrances created by the Contractor of all the Contractor's right, title and interest in and to the Works/ movable and immovable assets. The Contractor shall also deliver to the Employer or its nominated agency on transfer date or the termination date, whichever is later such project reports, manuals, plans, design drawings, reports, accounts operation and maintenance manual and other information as may reasonably be required by the Employer or its nominated agency to continue the operation of the Project either directly or by its nominated agency. The personnel of the Contractor may continue to be the employees of the Contractor subject to their written consent and the transfer of all the movable & immovable assets shall not in any manner affect their status as employees of the Contractor and they shall have no claim to any type of employment or compensation from the Employer or its nominated agency, which arises prior to such transfer. 52.2 On completion of the transfer by the Contractor to the Employer, the Employer shall issue an "Operation and Maintenance Agreement Completion Certificate" to the Contractor. The Operation and Maintenance Agreement Completion Certificate will have the effect of constituting evidence of transfer of all rights, titles and interests in the Project by the Contractor, and their vesting in the Employer.
53 Final Account	53.1 The contractor shall supply the Engineer with a detailed account of the total amount that the Contractor considers payable for construction works under the contract within 21 days of issue of certificate of completion of construction of works. The Engineer shall issue a defect liability including Operation and Maintenance certificate and certify any payment that is due to the correct and complete. If the account is not correct or complete, the Engineer shall issue within 42 days a schedule that states the scope of the corrections or additions that are necessary. If the account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the contractor and issue a payment certificate within 28 days of receiving the Contractor's revised account. The payment of final bill for construction of works will be made within 14 days thereafter.

	53.2 In case the account is not received within 21 days of issue of Certificate of Completion as provided in clause 50. I above, the Engineer shall proceed to finalize the account and issue a payment certificate within 28 days. The payment of final bill for construction of works will be made within 14 days thereafter.
54 Operating and Maintenance Manuals	54.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the PCC. 54.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the PCC, or they do not receive the Engineer's approval, the Engineer shall withhold the amount stated in the PCC from payments due to the Contractor.
55 Termination	55.1 The Employer may terminate the Contract if the Contractor causes a fundamental breach of the Contract. 55.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following: I. The Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Engineer; II. The Contractor is declared as bankrupt or goes into liquidation other than for approved reconstruction or amalgamation; III. The Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer; IV. The Contractor does not maintain a Security, which is required; V. The Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in clause 44.1; VI. Any other fundamental breaches as specified in the PCC. VII. If the Contractor fails to deploy machinery and equipment or personnel as specified in the PCC at the appropriate time. 55.3 Notwithstanding the above, the Employer may terminate the Contract for convenience 55.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

56 Payment upon Termination	56.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done and Materials ordered less liquidated damages, if any less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the PCC. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be recovered from the security deposit, and performance security. If any amount is still left un- recovered it will be a debt payable to the Employer. 56.2 If the Contract is terminated at the Employer's convenience, the Engineer shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less adva 56.3 nce payments received up to the date of the certificate, less other recoveries due in terms of the Contract, and less taxes due to be deducted at source as per applicable law. 56.4 If the contract is terminated due to any force majeure clause, then the employer shall pay to the contractor all the sums invested into the project within 60 days of the issuance of the termination letter of contract and settle all the sums invested by the contractor into the ESCO model after adjusting the depreciation and other financial parameters, if any, and the contractor shall transfer all the warranties in favour of the employer for the balance period of the defect liability period.
57 Property.	57.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer for use for completing balance construction work if the Contract is terminated because of the Contractor's default, till the Works is completed after which it will be transferred to the Contractor and credit, if any, given for its use.
58 Releases from Performance	58.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of the Employer or the Contractor, the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

59 Labor Laws and Regulations	59.1 The Contractor shall comply with all relevant labor laws and regulations applicable to the Contractor's personnel. 59.2 The Contractor shall provide equal wages and benefits to men and women for work of equal value or type. 59.3 The Contractor shall not employ any child to perform work, including work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. "Child" means a child below the statutory minimum age of 18 Years. 59.4 The Contractor shall not employ "forced and compulsory labor" in any form. "Forced or compulsory labor consists of all works or service, not voluntary performed that is extracted from an individual under threat or force or penalty. 59.5 The Contractor shall also comply the Labour law as given in Annexure 1. 59.6 The Contractor shall indemnify the DSCL and UJS against all payments/ dues/ interest/ damages or any other liability and/ or penalty proceedings, which may arise in future i.e. even after the expiry of the agreement, payable to EPFO and ESI Corporation as well as from all or any action taken/ proposed to be taken by the said Departments arising out of any irregularity/ default in payment (s) payable to the said departments."
60 Environmental Laws and Regulations	60.1 The Contractor shall comply with all applicable national, provincial, and local environmental laws and regulations. The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the contractor shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.
61 Force Majeure	61.1 In this Clause, "Force Majeure" means an exceptional event or circumstance: (a) which is beyond a Party's control,

(b) which such Party could not reasonably have provided against before entering into the Contract,

(c) which, having arisen, such Party could not reasonably have avoided or overcome, and

(d) which is not substantially attributable to the other Party.

61.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,

(c) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,

(d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and

(e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

61.3 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

61.4 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

61.5 Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

61.6 Each Party shall at all times use all reasonable endeavours to minimize any delay in the performance of the Contract as a result of Force Majeure.

61.7 A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

61.8 If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given , and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Procedure for Disputes to:

(a) an extension of time for any such delay, if completion is or will be delayed, under GCC Sub-Clause 25.1.2[Extension of the Intended Completion Date], and

(b) if the event or circumstance is of the kind described in sub-paragraphs (a) to (d) of GCC Sub-Clause 61.2 and, in the case of sub-paragraphs (b) to (d), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destructed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in GCC Sub-Clause 13 [Insurance].

61.9 After receiving this notice, the Engineer shall proceed in accordance with GCC Sub-Clause 4 [Engineer's Decisions] to agree or determine these matters.

61.10 67.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under GCC Sub-Clause 61 , or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with GCC Sub-Clause 55 [Termination].

61.11 Upon such termination, the Employer shall determine the value of the work done and issue a Payment Certificate which shall include:

(a) the amounts payable for any work carried out for which a price is stated in the Contract;

(b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Employer when paid for by the Employer, and the Contractor shall place the same at the Employer's disposal;

(c) other Costs or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;

(d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and

(e) the Cost of repatriation of the Contractor's staff and labor employed wholly in connection with the Works at the date of termination.

61.12 Notwithstanding any other provision of this Clause, if any

	event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance: (a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract. 61.13 The contractor shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination for default if and to the extent that it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure. 61.14 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Contractor that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Contractor. Such events may include, but not be limited to, acts of the Employer in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes. 61.15 If a Force Majeure situation arises, the Contractor shall promptly notify the Employer in writing of such condition and the cause thereof. Unless otherwise directed by the Employer in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
62 Role and Responsibility for Social Issue	62.1 The Contractor shall comply the Social issue given in Annexure 3.

63 Objective of PMC	63.1 The objective of this PMC is to assist the DSCL in implementation of the Project till the successful completion and handing over of all works to the DSCL and comprehensively supervise the works and activities carried out by the Bidder(s) as "Engineer's Representative" under the respective contract(s) in a manner that would ensure: 63.2 Total compliance of technical specifications and various other requirements contained in the respective contracts by the Bidder(s); 63.3 High standards of quality assurance system in the Consultancy as well as the works and activities of the Bidder(s); 63.4 Comprehensive and documented reporting to the DSCL of Consultant's own activities, progress of the Project(s) and compliances/ non-compliances by the Bidder(s); 63.5 Proper verification of measurements and bills submitted by the Bidder(s) so that payments made by the DSCL against these bills truly reflect the actual work done at site complying with the requirements of the respective contract(s);

SECTION 2.2
PARTICULAR CONDITIONS OF CONTRACT

Particular Conditions of Contract

A. General	
GCC 1.1 (r)	The Employer is Dehradun Smart City Limited, Dehradun, *Uttarakhand.*
GCC 1.1 (g) **GCC 1.1 (s)**	Completion period for Supplying, Installation, for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years is 12 (Twelve) months from the date of contract signing and Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance is of 10 years after completion of implementation period of one year. Engineer-in charge is the _____, appointed by Employer.
GCC 1.1 (bb)	The Project Management Consultant is technical consultant appointed by the Employer shall proof-check all GFC drawings/design submitted by the successful bidder and approve the drawings for execution of works.
GCC 1.1 (cc)	The Site is located at, Dehradun, ABD area, Uttarakhand.
GCC 1.1 (hh)	The intended Start Date shall be _____
GCC 1.1 (tt)	The Works consist Request for Proposal for Supplying, Installation, Operation & Maintenance of Energy Efficient Pumping Machinery including Electrical & Mechanical Installations Works and Complete SCADA System at Various Tube Wells & Booster Pumping Stations Under PPP Mode (ESCO Model) Including Operation & Maintenance of 10 years AND Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years in Dehradun City under "Smart City Mission"
GCC 3.1	The language of the contract is *English.* The law that applies to the Contract is the laws of Republic of India.
GCC 5.1	The Engineer *may* delegate any of his duties and responsibilities.
GCC 14.1	Site Data are as per the Scope of work and Technical Specifications.
GCC 21.1	The Site Possession Date(s) shall be: The site will be physically handed over by the Employer to the Contractor before date of start as per contract agreement and both the employer as well as the Contractor will issue a joint signed letter mentioning the handing over and taken over of the site.

B. Time Control	
GCC 26.1	The Contractor shall submit for approval a Program for the Works within 15 days from the date of the Letter of Acceptance and the Program shall be a part of the contract.
GCC 26.4	The period between Program updates is 10 days. The amount to be withheld for late submission of an updated Program is INR 1, 00,000/-.
C. Quality Control	
GCC 33.3	The Defects Liability Period is: Ten year
D. Cost Control	
GCC 41.2	Employer may appoint another authority, will be Project Management Consultant
GCC 46.1	The proportion of payments retained (Retention Money) shall be 5% from each monthly bill subject to the maximum of 5% of final contract price.
GCC 47.1	The liquidated damages for the whole of the Works (Implementation work of 12 months) are *[0.5% of the final Contract Price]* per week. The maximum amount of liquidated damages for the whole of the Works is 5% of the final Contract Price. or milestone 1 0.50% of the Contract Price per week For milestone 2 0.50 % of the contract price per week For milestone 3 0.50% of the contract price per week Milestone Physical target* of Period from the date of start of work works to be completed Milestone 1 20% 1/3rd of Intended completion period ** Milestone 2 50% 2/3rd of Intended completion period** Milestone 3 100% Full Intended completion period** *Physical progress shall be assessed as per the latest MPR duly verified by Engineer. ** Intended completion period shall be twelve months from the Start Date.
GCC 48.1	An advance of 10 % of contract value (if requested by the contractor) shall be given to the contractor on submission of an unconditional and irrevocable bank guarantee in a form given by the employer and from any scheduled commercial banks or nationalized banks acceptable to the Employer for an amount equal to the advance payment. The advance payment shall be adjusted from the monthly invoices uniformly.
GCC 49.1	Within 21 (twenty one) days after receipt of the Letter of Acceptance/Award, the successful Bidder shall deliver to the Employer a Performance Security of five (5%) of the Contract Price including of GST, valid up to 60 days beyond the date of completion of DLP period The performance security shall be either in the form of an unconditional

	Bank Guarantee or fixed deposit Receipts (FDR), in favor of Chief Executive Officer, Dehradun Smart City Limited Payable at Dehradun, Uttarakhand, from a Nationalized or Scheduled Commercial Bank. Failure of the successful Bidder to comply with the requirements of this Clause shall constitute sufficient grounds for cancellation of the award and forfeiture of the Earnest Money. He will also be debarred from participating in future bids under Dehradun Smart City Limited.
	Finishing the contract
GCC 54.1	The date by which "as built" drawings (and maintenance manuals) are required - within 56 days of issue of completion certificate
GCC 54.2	The amount to be withheld for failing to produce "as built" drawings by the date required in GCC 54.1 is 10 lakh (INR)
GCC 55.2(V)	The maximum number of days is: 70 Days
GCC 58.1	The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is 20%.

ANNEXURE-1

SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK.

a) **Workmen Compensation Act 1923:-** The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

b) **Payment of Gratuity Act 1972 :-** Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

c) **Employees P.F. and Miscellaneous Provision Act 1952:-** The Act Provides for monthly contributions by the Employer per workers @ 10% or 8.33%. The benefits payable under the Act are:

i. Pension or family pension on retirement or death, as the case may be.
ii. Deposit linked insurance on the death in harness of the worker. Payment of P.F. accumulation or retirement/death etc.

d) **Maternity Benefit Act 1951:-** The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

e) **Contract Labour (Regulation & Abolition) Act 1970 :-** The Act provides for certain welfare measures to be provided by the Contractor to contract Labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The principal Employer is required to take Certificate or Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer, if they employ 20 or more contract Labour.

f) **Minimum Wages Act 1948:-** The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act, if the employment is a scheduled employment. Construction of Buildings, Roads, and Runways are scheduled employments.

g) **Payment of Wages Act 1936:-** It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.

h) **Equal Remuneration Act 1979:-** The Act provides for payments of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.

i) **Payment of Bonus Act 1965: -** Deleted

j) **Industrial Disputes Act 1947:-** The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal

and what are the requirements for laying off or retrenching the employees or closing down the establishment.

k) **Industrial Employment (Standing Orders) Act 1946:-** It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

l) **Trade Unions Act 1926:-** The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.

m) **Child Labour (Prohibition & Regulation) Act 1986:-** The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.

n) **Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979:-** The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.

o) **The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996 :-** All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

p) **Factories Act 1948 :-** The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

ANNEXURE-2

SALIENT FEATURES OF SOME OF THE MAJOR LAWS THAT ARE APPLICABLE FOR PROTECTION OF ENVIRONMENT.

1. The Environment (Protection) Act, 1986 and as amended: This provides for the Protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beIngs, other livIng creatures, plants and property. 'Environment' Includes water, air and land and the Inter-relationship which exists among and between water, air and land, and human beIngs, other livIng creatures, plants, micro-organism and property.

2. The Forest Conservation Act, 1980, as amended, and Forest (Conservation) Rules, 1981 as amended: These provides for protection of forests by restricting conversion of forested areas Into non- forested areas and prevention of deforestation, and stipulates the procedures for cuttIng any trees that might be required by the applicable rules. Permissions under the Act also stipulates the norms and compliance requirements of the employer and any contractor on behalf of the employer.

3. State Tree Preservation Acts as may be In force: These provide for protection of trees of important species. Contractors will be required to obtain prior permission for full or partial cutting, uprooting, or pruning of any such trees.

4. The Wildlife (Protection) Act, 1972, and as amended: This provides for protection of wildlife through notifying National Parks and Sanctuaries and buffer areas around these zones; and to protect Individuals of nationally important species listed In the Annex of the Act.

5. The Biological Diversity Act, 2002: This provides for conservation of biological diversity, sustainable use of components of biological diversity, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or Incidental thereto.

6. The Public Liability Insurance Act, 1991 as amended and The Public Liability Insurance Rules, 1991 as amended: These provide for public liability Insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for mattes connected herewith or Incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.

7. The Ancient Monuments and Archaeological Sites and Remains Act, 1958 and the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, the Ancient Monuments and Archaeological Sites and Remains Rules, 1959 amended 2011, the National Monuments Authority Rules, 2011 and the similar State Acts: These provide for conservation of cultural and historical remains found In India.

Accordingly, area within the radii of 100m and 300m from the "protected property" are designated as "protected area" and "controlled area" respectively. No development activity (Including building, mining, excavating, blasting) is permitted In the "protected area" and development activities likely to damage the protected property is not permitted In the "controlled area" without prior permission of the Archaeological Survey of India (ASI) or the State UJSs of Art 160 and Culture or Archaeology as applicable.

8. The Environmental Impact Assessment Notification, 2006 and as amended: This provides for prior environmental clearance for new, modernization and expansion projects listed In Schedule 1 of the Notification. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any environmental and Social management plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.

9. The Water (Prevention and Control of Pollution) Act, 1974 as amended, and the Water (Prevention and Control of Pollution) Rules, 1975 as amended: These provide for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance Into water(whether directly or Indirectly) as may, or is likely to, create a nuisance or render such water harmful or Injurious to public health or safety, or to domestic, commercial, Industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms. Contractors will need to obtain consent for establishment and consent for operation of any item of work or Installation of equipment that generates waste water, and observe the required standards of establishment and operation of these items of work or Installations; as well as Install and operate all required waste water treatment facilities.

10. The Water (Prevention and Control of Pollution) Cess Act, 1977 and The Water (Prevention and Control of Pollution) Cess Rules, 1978: These provide for the levy and collection of access on water consumed by persons carrying on certain Industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution under the Water (Prevention and Control of Pollution) Act, 1974.

11. The Air (Prevention and Control of Pollution) Act, 1981 as amended, and the Air (Prevention and Control of Pollution) Rules, 1982: These provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence In the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (Including noise) present In the atmosphere In such concentration as may be or tend to be Injurious to human beings or other living creatures or plants or property or environment. Contractors will need to obtain consent for establishment and consent for operation of any item of work or Installation of equipment that generates air pollution such as batching plants, hot mix plants, power generators, backup power generation, material handling processes, and

observe the required standards of establishment and operation of these items of work or Installations.

12. Noise Pollution (Control and Regulation) Rules, 2000, and as amended: This provides for standards for noise for day and night for various land uses and specifies special standards in and around sensitive receptors of noise such as schools and hospitals. Contractors will need to ensure compliance to the applicable standards, and Install and operate all required noise control devices as may be required for all plants and work processes.

13. Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996: This provides for Requirement of preparation of on-site and off-site Disaster Management Plans for accident-prone areas.

14. The Explosives Act 1884 and the Explosives Rules, 2008: These provide for safe manufacture, possession, sale, use, transportation and import of explosive materials such as diesel, Oil and lubricants etc.; and also for regulating the use of any explosives used in blasting and/or demolition. All applicable provisions will need compliance by the contractors.

15. The Petroleum Rules, 2002: This provides for safe use and storage of petroleum products, and will need to be complied by the contractors.

16. The Gas Cylinder Rules 2004 and amendments: This provides for regulations related to storage of gas, and possession of gas cylinder more than the exempted quantity. Contractors should comply with all the requirements of this Rule.

17. Manufacture, Storage and Import of Hazardous Chemical Rules of 1989 and as amended: These provide for use and storage of hazardous material such as highly Inflammable liquids like HSD/LPG. Contractors will need to ensure compliance to the Rules; and In the event where the storage quantity exceeds the regulated threshold limit, the contractors will be responsible for regular safety audits and other reporting requirements as prescribed In the Rules.

18. Hazardous & Other Wastes (Management and Tran’s boundary Movement) Rules, 2016: These provide for protection of general public from improper handling storage and disposal of hazardous waste. The rules prescribe the management requirement of hazardous wastes from its generation to final disposal. Contractors will need to obtain permission from the State Pollution Control Boards and other designated authorities for storage and handling of any hazardous material; and will to ensure full compliance to these rules and any conditions imposed in the permit.

19. The Bio Medical Waste Management Rules, 2016: This provides for control, storage, transportation and disposal of bio-medical wastes. As and where the contractor has any first aid facility and dispensaries, established in either temporary or permanent manner, compliance to these Rules are mandatory.

20. Construction and Demolition Waste Management Rules, 2016: This provides for management of construction and demolition waste (such as building materials possible to be reused, rubble and debris or the like); and applies to all those waste resulting from construction, re-modeling, repair or demolition of any civil structure. Contractor will need to prepare a waste disposal plan and obtain required approval from local authorities, if waste generation is more than 20 tons in any day or 300 tons in any month during the contract period; and ensure full compliance to these rules and any conditions imposed in the regulatory approval.

21. The E-Waste (Management) Rules, 2016: This provides for management of E-wastes (but not covering lead acid batteries and radio-active wastes) aiming to enable the recovery and/or reuse of useful material from e-waste, thereby reducing the hazardous wastes destined for disposal and to ensure the environmentally sound management of all types of waste of electrical and electronic equipment. This Rule applies to every manufacturer, producer, consumer, bulk consumer, collection centers, 162 dealers, e-retailer, refurbished, dismantler and recycler Involved In manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed In Schedule I, Including their components, consumables, parts and spares which make the product operational.

22. Plastic waste Management Rules, 2016: This provides for control and management of the plastic waste generated from any activity. Contractors will ensure compliance to this Rule.

23. The Batteries (Management and Handling) Rules 2001: This provides for ensuring safe disposal and recycling of discarded lead acid batteries likely to be used in any equipment during construction and operation stage. Rules require proper control and record keeping on the sale or import of lead acid batteries and recollection of the used batteries by registered recyclers to ensure environmentally sound recycling of used batteries. Contractors will ensure compliance to this Rule.

24. The Ozone Depleting Substances (Regulation and Control) Rules, 2000 and as amended: This provides for regulation of production and consumption of ozone depleting substances In the country, and specifically prohibits export to or import from countries not specified In the Rules, and prohibits unless specifically permitted, any use of ozone depleting substance.

25. The Coastal Regulation Zone Notifications, 1991 and as amended: This provides for regulation of development activities within the 500m of high tide line In coastal zone and 100m of stretches of rivers and estuaries Influenced by tides. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.

26. The Motor Vehicle Act 1988 as amended (and State Motor Vehicle Acts as may be In force) and the Motor Vehicle Rules, 1989, and as amended (and State Motor Vehicle

Rules as may be In force): To minimize the road accidents, penalizing the guilty, provision of compensation to victim and family and check vehicular air and noise pollution. Contractors will be required to ensure full compliance to these rules.

27. Easement Act, 1882: This provides for the rights of landowners on groundwater. Contractors will need to ensure that other landowners' rights under the Act is not affected by any groundwater abstraction by the contractors.

28. State Groundwater Acts and Rules as may be in force and the Guidelines for Groundwater Abstraction for drinking and domestic purposes In Notified Areas and Industry/Infrastructure project proposals In Non-Notified areas, 2012: These provide for regulating extraction of ground water for construction/Industrial and drinking and domestic purposes. Contractors will need to obtain permission from Central/State Groundwater Boards prior to groundwater abstraction through digging any bore well or through any other means; and will to ensure full compliance to these rules and any conditions imposed in the permit.

29. The Mines Act, 1952 as amended; the Minor Mineral and concession Rules as amended; and the State Mineral (Rights and Taxation) Acts as may be in force: These provide for **163** for safe and sound mining activity. The contractors will procure aggregates and other building materials from quarries and borrow areas approved under such Acts. In the event the contractors open any new quarry and/or borrow areas, appropriate prior permission from the State UJSs of Minerals and Geology will need to be obtained. Contractors will also need to ensure full compliance to these rules and any conditions imposed in the permit.

30. The Insecticides Act, 1968 and Insecticides Rules, 1971 and as amended: These provide for regulates the manufacture, sale, transport, distribution, export, import and use of pesticides to prevent risk to human beings or animals, and for matters connected therewith. No one should import or manufacture; sell, stock or exhibit foe sale; distribute, transport, use: (i) any misbranded Insecticides, (ii) any Insecticide the sale, distribution or use of which is for the time being prohibited under the Act; and (iii) any Insecticide except In accordance with the condition on which it was registered under the Act.

31. National Building Codes of India, 2005 and as amended: This provides guidelines for regulating the building construction activities In India. The code mainly contains administrative regulations, development control rules and general building requirements; stipulations regarding materials, structural design and construction; and building and plumbing services. Contractors will be required to comply with all Bureau of Indian Standards Codes dealing with: (i) use and disposal of asbestos containing materials In construction; (ii) paints containing lead; (iii) permanent and temporary ventilations In workplace; (iv) safety, and hygiene at the workplace; (v) prevention of fire; (vi) prevention of accidents from faulty electrical gadgets, equipment and accessories; and all other such codes Incidental to the Contract.

ANNEXURE-3

The scope is to address and resolve social issues and consultations with stakeholders and communities, including socially and economically disadvantaged communities before during and after construction phase. The approach in particular include the following:

- Identifying key social issues associated with the proposed project and specify the project's social development outcomes;
- Assessing potential social and economic impacts both during the construction phase and in the operation phase.
- Reviewing policies, regulations and other provisions that relate to resettlement and rehabilitation, Equality, Socio-economic Development of people and other social issues;
- Social screening of various project components and likely impacts in terms of land, built-up Structures (loss of structures, houses, livelihood, etc.), and resultant involuntary resettlement and provide inputs (in terms of magnitude of impacts and mitigation measures).
- Based on the assessment of potential social and economic impacts establish criteria that will assist in the formulation of strategies; to the extent possible maximize project benefits to the local population and minimize adverse impacts of the project interventions in project area;
- Inform, consult and carry out dialogues with the project stakeholders on matters relating to project design, objectives, and implementation and provide specific recommendations to avoid/minimize social risks;
- Screen the social development issues in the project area and its vicinity and accordingly design the social services that may have to be provided by the project in order to improve the quality of life;
- Organization of Labour Awareness campaigns for Health, Hygiene and Safety.
- Organization of Community Awareness Campaigns on various social issues in project area.
- Community Consultations to obtain feedback and suggestions for better outcomes.
- Develop monitoring and evaluation mechanism to assess the social development outcomes.
- Ease of Access must be provided to the affected people (Road Users, Commercial and Residential).

- Proper Traffic Diversion Plan will be discussed, prepared and approved by the Transport UJS as well as must be informed and circulated before initiation of work.

- Consultation with Shop Owners, House Owners and Community will be done and proper information will be circulated before initiation of work.

- Major construction activities will be implemented during night hours.

- All safety Provisions will be followed during construction.

- Cautionary Boards, Signages shall be installed at each construction site during construction.

- Road wise Awareness Campaigns & Sensitization programs for Road Users and Construction Labour can also be planned.

- ***If any partial damage of Commercial and residential structure will occur during construction, contractor will be responsible to compensate the loss and/or restore the same".***

SECTION 2.3

SPECIAL CONDITIONS OF CONTRACT (FOR ESCO PROJECT)

The special conditions are supplementary instructions for the implementation of Operation & Maintenance period of ten years to the tenders and shall form part of the contract.

SPECIAL CONDITIONS OF CONTRACT FOR OPERATION & MAINTENANCE PERIOD OF TEN YEARS

1. HANDING / TAKING OVER SCHEME

(a) The UJS (Uttarakhand Jal Sansthan) shall hand over the complete system including the civil structures of Tube Wells, Over Head Tanks & pumping station and pipeline, and all the installed mechanical, electrical, instrumentation system within the pumping stations as per details of equipments listed herein thereafter. The civil structures within the pump house shall be as per the present status. The tenderer is suggested to inspect before bid submission all the structures and account for suitable repair / rehabilitation works, as these are to be maintained in proper manner as per good engineering practices and shall be handed over in reasonably good conditions, with due consideration of normal damages during contract period.

The UJS reserves the right to meet out any losses in case of damage/ theft/ mishandling etc. of the Government properties due to negligence of the contractor from the security deposits in the UJS. The contractor shall hand over all the equipments in working condition on completion of the contract. If the losses/ damages caused by the contractor are more than the security deposit & other deposits available with UJS then contractor shall have to deposit the difference amount, if not deposited, then UJS may recover the dues under various acts & clauses.

(b) The tenderer have taken over the system as mentioned above, is required to plan and take up the works of rehabilitation, repair of all civil structures, so as to restore the structures in good conditions. No approvals shall be required for such works, unless the tenderer requires altering the shape of the structure.

(c) For renovation / replacement of existing machinery the tenderer shall make a complete proposal pumping stations wise and submit for approval of UJS. The proposal should justify the sufficiency of the system hydraulics as asked for in the tender document. All calculations / data sheets in this respect shall be submitted for approval of the UJS and without approval no changes shall be taken up. All new equipments shall be as per approved vendor list.

(d) If the tenderer proposes the repair of the existing equipments, than the repairs should be done through an established manufacturer or using genuine spares.

(e) During this period of renovation, repair and rehabilitation of system of 6 months or extended thereof, none of the penalties defined in the contract hereafter shall be applicable, unless and otherwise specifically provided for.

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2. MONTHLY & ANNUAL REPORTS AND MEETINGS

2.1 MONTHLY & ANNUAL REPORTS

Monthly production reports shall be prepared by the tenderer and submitted to the UJS in three copies. The first monthly report shall cover the period up to the end of the first calendar month following the commencement date. There after every monthly report shall be submitted in the prescribed format within 7 days after the last day of the month to which it relates.

Reporting shall continue until the contractor has completed all work, which is known to be outstanding at the completion date.

Each Report shall include the following but shall not be limited to:

(1) Daily water flow meter reading at Raw Water Pumping station and other pumping stations, along with KWH meter reading at Raw Water Pumping Stations other pumping stations at scheduled time in formats prescribed by engineer in- charge. At Raw Water Pumping Station & other pumping stations, flow meter is to be installed. The tenderer will install flow meter as per IEC standards as per direction of Engineer in-charge immediately. The cost of flow meter will be paid by the DSCL.

(2) Monthly return of total production of the month & power consumed, power breaks down report, reason for low production etc.

(3) Annual reports in the prescribed format

2.2 MONTHLY MEETINGS:

Monthly meeting shall be held in the office of DSCL with Superintending Engineer (Urban), UJS as mutually fixed in advance. The proposed agenda for the meetings shall be exchanged at least 1 week in advance. It is required that a decision maker of the Contractor is present at the meetings so that binding decisions can be taken about outstanding issues. Generally, the following issues shall be discussed.

- Review of the last months work production figures & program for next month's production
- Payment issues if any
- Disputes if any
- Any other issues deemed necessary by DSCL and UJS.

3. WEBSITE

Contractor has to host web site on internet during the contract period. The web site shall be up & in working with in a period of 3 month of taking over of the complete operation, daily, weekly, monthly and annual production & power consumption of each production source shall be available on web pages. These data's shall be available on entire period of contract.

4. RIGHT OF ACCESS TO THE SITE DURING EXECUTION

The UJS shall give the contractor right of access to all parts of the site. The site for execution of the work will be made available as soon as the work is awarded. In case, it is not possible for the UJS to make the entire site available on the award of the work, the Bidder shall arrange his working program accordingly. No claim, whatsoever, for not giving the site in full on award of the work or for giving the site gradually in parts will be tenable.

However, if and to the extent that the UJS's failure was caused by any error or delay by the contractor, including an error in, or delay in the submission of, any of the contractor's documents, the contractor shall not be entitled to such extension of time.

5. REPLACEMENT/ REPAIR OF OUT OF ORDER PUMP MACHINERY AND ELECTRIC PANELS AND OTHER ELECTRICAL EQUIPMENTS ETC DURING CONTRACT PEROD.

The contractor will do the necessary repairs of pumps, motors, electric panels and other accessories. Contractor will have to replace burnt out motors, defective pumps at all the pumping stations by repaired / new tested pump set within a period of 24 hours after reporting of fault/defect.

Electric accessories in panel board going out of order shall be replaced /repaired with- in 6 hours after reporting of fault/break - down.

Repairing/ replacement of out of order Switchyard equipment and power lines shall have to be done with in a period of 24 hours after reporting of the fault/ defect.

All the charges for the repairing / replacement of defective pumps, motors, electric panel, electrical accessories and other related equipment are to be borne by the contractor.

During first twelve month of contract the tenderer will do the O&M of the scheme along with the work of Repair, Renovation and Replacement (RRR). The tenderer will do the necessary repairs / renovation / replacement of existing pumps, motors, electric panels and other accessories at the pumping stations. During the period of Repair, Renovation, Replacement of 12 months, the contractor shall plan his work in such a way that there is no disturbance in flow notified by the UJS representative. During this period the contractor shall be required to pump minimum water (Existing Production) up to filter plant or the notified flow whichever is less. In case the repair, renovation, Replacement works so permit, he may pump more water on demand of UJS, however in case the notified flow is more than minimum flow, no compensation would be imposed on the tenderer if Raw Water Pumping Station production is up to 90% of the notified flow.

During the RRR period, the contractor shall do the repair of the mechanical, electrical, instrumentation work promptly. For such repair the UJS shall provide them sufficient shutdown period. All repairs should be completed within 12 hours of its notice. However the system maintenance will only be considered insufficient in case the main working & stand bye system is not in a position to deliver 90% of notified flow in limitations stated above and shall call for compensation stated herein after.

6. All pumps and pumping machinery which are in operative condition at pumping stations, Contractor can use these pumps if required. The O&M of these pump sets and their repairs if needed will be borne by the contractor. No extra payment will be admissible to the contractor for operating these pump-sets. If contractor not required any of the pump or pumping machinery same have to deposit to the UJS store.

7. THE CONTRACTOR

7.1 CONTRACTORS GENERAL OBLIGATIONS

The contractor shall design the system, execute and complete the works in accordance with the contract, and shall remedy any defects in the works.

Contractor will procure the pump-sets, motors etc. Pumping Stations and Tube Wells to satisfy the requirement of the UJS as notified hereinafter. The selection of pump / motor and its data shall be with sufficient details to satisfy the UJS requirement and shall be submitted to the UJS for approval. The system hydraulics shall be checked by modified Hazen William Formulae, using coefficient of friction as per UJS/DSCL's recommendations. Along with the selection of pump / motor, the contractor shall submit the piping design within the pump house as per standard practices and shall submit them for approval of UJS/DSCL.

The electrical panels and wiring of Pumping Stations shall also be replaced / rehabilitated if required, with consideration to their safe operations. The calculations for the same shall also be submitted for approval of UJS/DSCL.

The plan of change of equipments / repair or rehabilitation shall be made in details, so as to establish the working time of the replacement / repair / rehabilitation and to ensure that during such repairs, the time taken is not more than that proposed in plan. The plan should also ensure that in periods before or after the repair / renovation / rehabilitation, the system is sufficient to deliver the notified flow of UJS, within the stated limitations written in the tender document.

The works shall include any work, which is necessary to satisfy the UJS/DSCL's requirements, or is implied by the contract, and all works, which (although not mentioned in the contract) are necessary for the completion, or safe and proper operation, of the works.

During the entire contract period, the contractor shall be under obligation of maintaining the system in good conditions as per Industrial practices, run the system at optimum capacity, adhere to all Government safety by laws, labour laws and other Acts / Law and shall observe the periodic requirements set-forth in this tender document.

The contractor shall be responsible for the adequacy, stability and the safety of all site operations, of all methods of construction and of all the works.

The contractor shall provide all facilities required for quality control tests, tests for material, equipment and equipment(s), and/or all other facilities otherwise referred in the conditions of contract(s) and/or otherwise necessary to complete the works with due supervision of Engineer-in- charge.

The Contractor shall, whenever required by the UJS, submit details of the arrangements and methods, which the contractor proposes to adopt for execution of the works, No significant alteration to the arrangements and methods shall be made without this having previously been notified to the UJS.

Procurement of spares for O&M : For the pumping stations which awarded for O&M Contractor shall normally procure the genuine spares from the original manufacturer/sole distributor/authorized dealer of the make/equipment which is being replaced. Prior approval shall be obtained from UJS/DSCL in case of procurement from any other source.

7.2 CONTRTACTORS REPRESENTATIVE

The contractor shall appointment the Contractor’s Representative and shall give them all authority necessary to act on the contractor’s behalf under the contract.

Unless the Contractor’s Representative is named in the Contract, the Contractor shall, prior to the Commencement Date, submit to the UJS/DSCL for consent the name and particulars of the person the Contractor proposes to appoint as Contractor’s Representative, If consent is withheld or subsequently revoked, or if the appointed person fails to act as the Contractors Representative, the contractor shall similarly submit the name and particulars of another suitable person for such appointment.

The Contractor shall not, without the prior consent of the UJS revoke the appointment of the contractor’s Representative or appoint as replacement.

The Contractors Representative shall, on behalf of the Contractor, receive instructions from Engineer In charge.

The Contractors Representative may further delegate powers, functions and authority to any person, and may at any time revoke the delegation. Any delegation or revocation shall not be take effect until the UJS/DSCL has received prior notice signed by the Contractor Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

7.3 THE SAFETY PROCEDURES

Adequate safety precautions against fire, flooding, lightening, electrical shocks and accident due to moving/ non moving heavy equipment's shall be strictly observed by the contractor at his own cost. Suitable safety measures like boots, gloves, insulated tools, alarms, Chequered rubber sheets etc. shall be provided by the contractor at his own cost. A fully equipped necessary medical first aid box should be available at pump house at all time. In absence of observance of above safety precautions, the contractor shall be responsible for any unforeseen loss of the equipment or persons dealing with these equipments.

The contractor shall

- Comply with all applicable safety regulations.
- Take care for the safety of all persons entitled to be on the site.
- Make reasonable efforts to keep the site and the work clear of unnecessary obstruction so as to avoid danger to the persons deployed on O&M.

7.4 UN-FORESEENABLE DIFFICULTIES:

- The contractor shall be deemed to have obtained all necessary information as to risk, contingencies and other circumstances which may influence or affect the works.
- By signing the contract, the contractor accepts the total responsibility for having ascertained all difficulties and costs of successfully completing the works and
- The contract price shall not be adjusted to take account of any unforeseen difficulties or costs.

7.5 RIGHTS OF WAY AND FACILITIES

The contractor shall bear all costs and charges for special and/or temporary rights of Way, which he may require, including those for access to the site. The contractor shall also obtain, at risk and costs, any additional facilities outside the site which he may require further purposes of the works.

However, the contractor shall be provided the site and all pump house campus to undertake the work of repair / renovation / rehabilitation.

7.6 AVOIDANCE OF INTERFERENCE

The contractor shall not interfere unnecessarily or improperly with:

- The convenience of the public, or
- In the access to and use and occupation of all roads and other land, irrespective of whether

they are public or in the possession of the UJS or others. The contractor shall indemnify and hold the UJS/DSCL harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

7.7 SECURITY OF THE SITE

Unless otherwise stated in particulars conditions:

- The contractor shall be responsible for keeping unauthorized persons off the site, offices, campus etc. within the scope of works.
- Authorized persons shall be limited to the Contractor personnel and the UJS/DSCLs personnel and to any other personnel notified to the Contractor, by (or on behalf of) the UJS/DSCL.
- Providing adequate manpower for the security of the material brought to the site for which payment has been made to the contractor.

7.8 CONTRACTORS OPERATIONS ON-SITE

The contractor shall confine his operations to the site, and to any additional areas which may be obtained by the contractor and agreed by the UJS as working areas. The contractor shall take all necessary precautions to keep contractor's equipment and contractor personnel within the site and these additional areas, and to keep them off adjacent land.

During the execution of the works, the contractor shall keep the site free from all unnecessary obstruction, and shall store or dispose of any contractor's equipment or surplus materials. The contractor shall clear away and remove from the site any wreckage, rubbish and temporary works which are no longer required.

7.9 LAND FOR THE WORK AND FOR THE CONTRACTOR'S ESTABLISHMENT

The land or the land rights for the sites of the permanent work will be provided by UJS according to the progress of work. For the purpose of constructing contractor's yard, go-down, site office, staff quarters, etc. the contractor may utilize the land and existing buildings / structures allocated to him by UJS after obtaining requisite permission from the Engineer in Charge. All expenses in connection with purchase or construction or maintenance or removal etc. of such items shall be borne by the Contractor.

UJS may allocate the land and buildings for use by the Contractor according to its possibilities only. If the land or buildings are not sufficient for the purposes of the Contractor's establishment, additional land or buildings will have to be procured / rented by the contractor himself at his own cost and expenses as per his requirement.

8. RULES AND REGULATIONS APPLICABLE ON STAFF ENGAGED BY CONTRACTOR

Staff engaged for entire operation/ maintenance etc. shall have to be in accordance with the rules and regulation laid down by the Ministry of Labour Welfare, Govt. of India, The wages and other essential amenities, group insurance, compensation etc. shall be paid as per Government rules and all expenditure on this account shall be contractor's responsibility. The necessary registration under rules shall be mandatory.

The compensation due to loss of lives/ retrenchment etc. shall be borne by the contractor. The DSCL/UJS shall not bear any liability of the labours, as it is the entire responsibility of the contractor. He will be employer under labour/ factory act 1948 etc. and UJS/DSCL is only concerned with O&M through this contract.

The contractor is liable for engaging sufficient skilled staff for proper O&M of all machinery and pumping station as directed by Engineer in-charge. The contractor will pay the regular monthly wages and essential amenities to all the labour engaged every month without any lapse, irrespective to the condition that the monthly payment of O&M of project is being made to the contractor by the DSCL on the recommendation of UJS for that month. The payment to contractor for the O&M work of this project may be got delayed for want of necessary budget and credit limit being issued by the DSCL for payment of his monthly bills. In no case unrest in the contractor labour working on the above project water supply scheme would be tolerated for not making the regular monthly wages payment to the labour engaged by the contractor. Otherwise the contractor will be charged penalty as per rule and the payment of work not carried out by contractor would be reduced proportionately.

9. SITE BOOKS

For the purpose of quick communication between the Engineer in Charge and the Contractor, site books shall be maintained at all sites, where work is being carried out, so as to be readily available. Any instructions or order which the Engineer in Charge may like to issue to the Contractor may be recorded by him in the site book and two copies thereof taken by him for his record.

10. POWER CHARGES

The electric power shall be provided by Uttarakhand Power Corporation Limited at respective pumping stations. All expenses of power charges shall be borne by the UJS at present the power charges are Rs. 5.10 Per Unit, it may increase or decrease which will be paid by the DSCL on the recommendation of UJS and also calculation for the payment to the contractor will be made based on the power charges during the period of invoice, but increase in power charges due to non maintenance of requisite Power Factor to a minimum limit of 0.90 of this unit or any surcharges due to power consumption in excess of Maximum Demand Indicator (MDI) shall be borne by the contractor and deducted from his running payment from time to time, however if incentive to the UJS made by the UPCL for maintaining PF more than 0.95 then 50% of the incentive amount will be shared to the contractor also.

Power tariff on which payment calculated shall be made inclusive of Unit Power Charges, Electric Duty, Water Cess, Urban Cess etc. which are based on power consumption. In future if UPCL Changes the power tariff pattern calculation of payment to the contractor shall be made only on the items which are based on power consumption

11. TESTING OF PUMPS, FLOW METERS, ENERGY METERS ETC.

The contractor shall submit test certification from the manufacturer for all new pumps, motors, flow meter brought by him before installation at Pumping Stations and Tube Wells of design duty condition. The inspection/ testing charges for all Equipment(s) and material(s) if required for the work, the arrangement for inspection/testing and expenses thereto shall be borne by the contractor.

Contractor shall submit test certificate including calibration report of all flow meters after getting them tested by FCRI Karela before installation and also any time during O&M of 10 years as required by UJS/DSCL, the inspection/ testing charges thereof, the arrangement for inspection/testing and expenses thereto shall be borne by the contractor.

Contractor shall submit test certificate including calibration report of all energy meters after getting them tested by UPCL or NABL certified test lab approved by UJS/DSCL before installation and also any time during O&M of 10 years as required by UJS/DSCL, the inspection/ testing charges thereof, the arrangement for inspection/testing and expenses thereto shall be borne by the contractor.

12. CONTRACT PERIOD

The total contract period shall be of 132 months. The contractor shall take over all the pumping stations along with pumping machinery to be maintained by him within 10 days of start of the contract. The operation & maintenance period of 120 months shall commence, after taking over of the Pumping Stations specified in the scope of work.

Within 6 Months after 10 days from the order date, base line will be decided by the DSCL on the basis of recommendation of UJS. For the measurement of flow for base line contractor have to install the electromagnetic flow meters, for the measurement of the power the energy meters installed by contractor.

After releasing Base Line Orders by the DSCL on the recommendation of UJS, contractor can start the Repair/Renovation/Replacement of the pumps and pumping system. Takeover of the entire pumping system can be taken by the contractor after 6 Months 10 days, from the date of order however it should not be delayed beyond 12 months, i.e. the start of O&M period, from the date of order.

He would be allowed to procure & install energy efficient new pumping sets at Pumping Stations and Tube wells. The whole of the work, including mobilization, reconnaissance, investigations, design, procurement, installation, testing, commissioning & demobilization has to be completed within a period of 12 months calculated from the commencement date, which is 10 days after the written order to commence the Works.

If contractor fails to complete this work within 12 months, or within the extended time by Engineer In charge , contractor shall be charged with the minimum guaranteed saving.

13. PROJECT DURATION /TIMELINES

13.1 Timelines during the project

Sl no	Activity	Timelines
1	Issuance of LOI 2. Signing of contract Agreement 3. Taking over charge of PS 4. Declaration of date of start of Project	T1=T0+2 months
2	a) **Establishment of the base line performance** of each pumping station in terms of specific energy consumption (SEC) i.e. kWh/ kL. b) **Approval of Authority** on base line specific energy consumption (SEC)	T2=T1+4 months

3	1. **Proving energy meter & Flow meter at each** PS for reconciliation of kWh consumption &pumped water volume respectively, required for assessment **2.Providing pumping station performance monitoring** system/ equipment's complete in all respect including web based Centralized Real Time Monitoring system at each pumping station for local &**remote monitoring of station perfo**rmance and provide data services to DSCL as required.	T3=T2+ 5 months
4.	a) **Implementation of required energy saving measures** i.e., carry out necessary replacement/ refurbishment/ augmentation/ up-gradation/ modifications/ rectifications etc in accordance with tender specifications & as approved by Employer.	T4=To+12 months
5.	Start Performance contract for the entire project	T5=T4+120 months

Note:

a) **ESCO Operation and Maintenance Period** shall commence immediately after 12 months and written order to commence shall be issued by DSCL accordingly and shall continue for 10 years.
b) **It may be noted that during Preparation and Implementation period power charges shall be borne by Concessionaire and total power charges as per actual shall be paid by Concessionaire directly to** UPCL.

13.2. ESCO Operation and Maintenance Period:

a. The scope of work includes carrying out the work for Energy Saving measures at each pumping station to improve the overall performance of the pumping station. This is termed as "Energy-service company Model (ESCO)" and this period of execution of O&M are called ESCO O&M Period.
b. The energy saving measures at each pumping station of DSCL will improve the overall efficiency of the pumping station and this will reduce the overall energy bill of the pumping station.
c. Any replacement/ refurbishment/ additional equipment supplement (if any) in existing pumping system if required to maintain or reduce baseline average energy consumption (E) kWH /KL shall be in the scope of contractor under Schedule A, except as specified in Schedule B of the tender.
d. If energy consumption exceeds approved **Baseline Energy Consumption**, during ESCO Execution period of 12 Months, such excess amount should be borne by Contractor.
e. If Energy Saving in any month during the ESCO O&M period of 120 months is less than 10% assured saving, then the difference of 10% energy cost and actual saving shall be borne by the contractor.
f. Since Additional work as specified under schedule B of the tender are to improve the overall efficiency of the system, such cost of installation, their operation, maintenance and repair of all pumping stations is to be carried out, during the entire period even though they have been paid for by DSCL. The contractor must consider such cost also while filling the price bid.
g. **It may be noted that during ESCO Operation and Maintenance Period power charges**

shall be deposited in ESCROW Account as per terms and condition of Escrow Agreement and shall be paid to UPCL through Escrow Account.

14. PAYMENTS

a. Provision of separate Project Account and Escrow account shall be established as per provision of Contract Agreement. Contractor shall maintain Separate Project Account during entire Contract period.
b. The Contractor shall raise following invoices on monthly basis for the Project during the Duration of Project for getting the payment / recoveries if any from DSCL.
    i. Invoices for works as defined under Schdule B (upgrdation) during Duration of Project (12 Months)
    ii. Energy Saving Invoices during ESCO Operation and Maintenance Period
c. The up gradation and ESCO bills shall be raised by 5th of every month and shall be certified within one week of submission. The payment shall be made within 30 days of submission to bills to the employer.

15. ESCROW ACCOUNT PROVISION

The EMPLOYER shall open and establish an Escrow Account from the LOI date, with a Bank (the "Escrow Bank") in accordance with this Agreement read with the Escrow Agreement.

The nature and scope of the Escrow Account, deposits into Escrow Account during the duration of Project and withdrawals from Escrow Account during the duration of Project and upon Termination will be fully described in the agreement (the "Escrow Agreement") to be entered into amongst the Contractor, the Employer, the Escrow Bank which shall be substantially in the form to be set forth by DSCL with the Bank.

16. DOCUMENTS REQUIRED FOR PAYMENT

The contractor shall submit the following documents in duplicate along with the invoice/bill.

- Certified copies of the pumping stations wise statement of water production & energy consumption.
- Statement of new/repaired pumps operated during the month.
- Bill/invoice prepared on the basis of terms of payment.
- Any other document/ report required by Engineer in charge.

17. BASIS OF PAYMENTS TO CONTRACTOR

For this clause and the clause(s) related to compensations, the following definitions shall be used.

Notified Flow: Monthly Notified Flow per Day shall be communicated to the contractor during operation period of contract in advance. The Notified Flow per Day shall be communicated to the contractor in writing by the Engineer in Charge every month. Any change in notified flows communicated earlier shall be communicated to the contractor minimum 24 hours prior to the effective date of notified flow. In case, if any notified flow is not communicated by the UJS/DSCL for particular month, contractor has to maintain the

notified flow or flow supplied in last consecutive month. Notified flow shall not be less than 50% of the existing flow of 214.712 MLD. Contractor has to maintain minimum 90% of the Notified Flow from each TW & Booster Pumping Station severally. In future with the increase in demand of the water or as per the direction by the engineer in charge the production can be increased up to the 270 MLD.

Flow Delivered: The delivered flow shall the flow as per electromagnetic flow meter installed at TW or Booster Pumping Station from the TW or Booster Pumping Station to OHT/Ground Reservoir or direct into Distribution System during the period of 24 hours from 6.00 AM to 6.00 AM on consecutive days, or as decided by UJS for different seasons. In case of any defect in flow meter, the flow shall be determined based on the average flow of pumps with their working time for the respective day. Flow in branch shall be taken as average flow of past 30 days, when the installed flow meter is defective.

If contractor fails to Repair/Replace the defective flow meter within 7 Days, a penalty of Rs. 500/Day shall be imposed.

Minimum and Maximum Flow: The Contractor and UJS assure that the minimum monthly average flow shall be 107 MLD, the UJS may ask up to 270 MLD. For delivery of notified flow, the contractor shall be free to operate any combination of working/stand by pumps installed, if any, at the TW/Booster Pumping Station. To increase the flow from 214.712 MLD to 270 MLD the responsibility of replacement/repair/retrofit the pumping machineries etc shall be of the contractor. The contractor shall also be responsible to -

(i) To adhere to all laws, by-laws, acts notifications of Central / State / Local Governments.
(ii) To operate the system in efficient manner and to keep the system in good conditions as per the accepted good industrial practices.
(iii) Operate the system in such a fashion to minimize losses in case of break down, faults, public riots, and force majeure conditions.
(iv) To adhere to all safety measures and to obtain all required licenses / permits for operation of the system.

Payment for supply installation & operation of Energy Efficient pumps shall be incentive based and made on the following principles:

Payment Mode: Payments shall be made on bio-monthly basis as approved in the work order and the cost of energy saving to be paid to contractor, as per his accepted rates in order. Calculations for energy charges shall be based on the details narrated below.

i. **Deductions:** All statutory deductions shall be made from the bills. With these deductions for Performance Security shall be made as per provisions of General Conditions of Contract if applicable. Deductions towards compensations, if any, as per contract, any recovery called by any court of law and / or recoveries of other contracts within the DSCL/UJS, shall also be made from the due payments.

ii. **Required System hydraulics:** The replacement / repair / renovation of the system should be done so as to ensure at least present flow by Row Water pumping stations and from other pumping stations should not be less than the existing water production. To achieve this contractor shall be free to select the number of working pumps. All pumps installed shall be with suitable motors, panels, delivery piping and electrical cables. The installed / renovated system at Row water pumping station should be sufficient to delivery maximum water with safe operations.

(a) During the first 3 months of the contract, the minimum guaranteed 10% saving shall not be charged from the contractor. However, during this period, if the saving in energy is

achieved by the tenderer, than the saving shall be equally shared between the DSCL & the tenderer. During remaining period, the minimum guarantee saving in power unit consumption shall be 10% or more as quoted in the bid by the contractor, due to installation and operation of energy efficient pumps.

(b) Base line energy consumption in terms of KWH/KL

DSCL/UJS has calculated base line water production based on manual measurement and the name plate data available on the present pump sets, also the average power consumption is based on the name plate data of the present pump sets and the electricity bills received in last year for these pump sets. Therefore actual baseline water production will be calculate after installation of water meter by the contractor and reading shall be taken in presence of UJS Officer not below the rank of Assistant Engineer and this shall be got approved in written by DSCL, In case of KWH (Power consumption base line), separate (Not have any load other than the pump sets covered under this contract) energy meter will be installed by the UJS with the help of the UJS, and the reading will take out in presence of UJS Officer not below the rank of Assistant Engineer and this shall be got approved in written by DSCL. Based on the reading taken out for a period of one month the base line will be finalized by Engineer In charge. And the same will be used for the calculation monthly payment.

After Replacement/Repair/Renovation after 6 Months and within 12 Months of implementation period and after finalizing the base line contractor can taking over the entire system, and inform to the Engineer In charge with the date time and Present Reading of the Flow meter and Energy Meter.

(c) The contractor shall be eligible for receiving bio-monthly payment under the contract after 12 months and 10 days of the award of the contract for performance based part of the contract.

if contractor completed work of Installation of Flow Meter and Replacement/ Repair/Renovation of pumps and pumping machinery before 12 Months and he is ready to take over the system for Energy Saving, he may take over the system from that day, and payment to the contractor for energy saving shall be made from the date of Take over the system.

(d) Payment of performance based part of the O&M work shall be made on the following principles:

Monthly payments shall be made on the basis of total energy savings on the water produced from Tube Wells & Pumping Stations as mentioned in various clauses of tender document during the month, in accordance to the payment terms. For this monthly KWH meter readings of energy meters to be installed by contractor and electromagnetic flow meter readings at Tube Wells & Water Pumping Stations will be used.

(e) At present no separate energy meters are installed at Tube Wells, Pumping Station, this responsibility of Contractor to install separate energy meter on each Tube Wells & pump houses. In case if it is not possible to take individual electric connections by UJS, than a sub-meter can be install.

(f) At present no flow meter are installed at Tube Wells & Pumping Station, The contractor has to install electromagnetic flow meters at rising mains from Tube Wells & Pumping

Station. Base line water production / transmission / distribution from Tube Wells & Water Pumping Stations is to be assessed continuously for 1 months with the existing pump sets after installation of flow meters and energy meters as mentioned above by the contractor.

Base line energy consumption in terms of KWH/KL of water produced / transmitted / distributed from Tube Wells & Water Pumping Station represents the figure calculated on the basis of overall energy consumed and water produced/ transmitted/distributed by Tube Wells & Water Pumping Station as observed through energy meters and flow meters.

(g) As this tender is designed for the period 10 years, in case if any water source like bore wells or other source become dry or damage due to any natural reason which is not under the control, in that case the UJS will arrange the another source of water immediately, and contractor have to shift the pumping system to that source, not additional cost for this will be provided to the contractor. In case if the UJS is not in position to provide another source of water, or the time is being consumed in that process than an average payment based on the minimum water production and power consumption will be made to the contractor.

(h) In case if over period a time UJS found another better sources of water due to change in geographical condition or government policies, and the production from theses sources as covered in this project/Tender is no further required or required lesser than the present flow, in that case payment based on the minimum water production and power consumption will be made to the contractor.

18. (a) Calculation of payment for Pump houses to be made to the contractor per month will be done as under:

S. No.	Description	Unit	Calculation
1.	Base line energy consumption per KL of water produced (e)	KWH/ KL	e
2.	Base line Delivery Pressure of Existing Pumps (H1)	Meter	H1
3.	Total water produced during the month under consideration from sources to be maintained by the contractor. As per daily/monthly production statement based on actual Bulk meter reading (V)	KL	V
4.	Total energy consumed during the month on above sources. As per daily/monthly Electric consumption statement based on actual energy meter reading (K)	KWH	K
5.	Average Delivery pressure for the Pump Houses to be reckoned on the basis of observation taken after every Twelve month during 120 months of contract period (For the first 12 months of the contract, this would be taken as equal to base line pressure).	Meter	H2
6.	Correction factor (C) for variations in average delivery pressure to be calculated as below:- 1+Weighed average %.(+) Increase/(-) decrease in pressure of pump due to variation in delivery pressure divided by 100. (Sample calculation shown at annex…….).	C	C=1+((H2 -H1)/H1)
7.	Base line energy consumption corrected for water delivery pressure variation (E).	KWH/ KL	E=C*e
8.	Energy Savings (S)	KWH	S=E*V-K
9.	Base line power tariff (T) Rs.5.12 (The base line tariff will be change as per the tariff mentioned in the electricity bill of that month)	Rs./ KWH	T= 5.12
10.	Financial savings at base line tariff (F).	Rs.	F=S*T
11.	Guaranteed minimum saving of power units consumption due to installation and operation of energy efficient pumps 10% of Base Line Power consumption (U)	KW	U= (e*V)*0.1
12.	Corresponding minimum financial saving based on base line tariff (R).	Rs.	R= U*T
13.	Balance savings available for sharing (B)	Rs.	B=F-R
14.	% Share to be passed on to the contractor from the sharable savings as per the approved bid of the lowest contractor (P).	%	P
15.	Payment due to the contractor for the month (G)	Rs.	G=B*P/100
16.	Saving accrue to UJS.	Rs.	F-G

Note: *If 'G' is less than 'R', no payment shall accrue to the contractor and the short fall, (R-G), shall be added to the base line savings to be retained by the UJS during the subsequent month

16(b) Calculation of payment for Tube Wells to be made to the contractor per month will be done as under:

S. No.	Description	Unit	Calculation
1.	Base line energy consumption per KL of water produced (e) = Total Power Consumption/Total Water Production	KWH/ KL	e
2.	Base line average depth of water table (D1)	Meter	D1
3.	Total water produced during the month under consideration from sources to be maintained by the contractor. As per daily/monthly production statement based on actual Bulk meter reading (V)	KL	V
4.	Total energy consumed during the month on above sources. As per daily/monthly Electric consumption statement based on actual energy meter reading (K)	KWH	K
5.	Average water table below the ground for sources to be reckoned on the basis of observation taken after every Twelve month during 120 months of contract period (For the first 12 months of the contract, this would be taken as equal to base line water table).	Meter	D2
6.	Correction factor (C) for variations in average delivery pressure to be calculated as below:- 1+Weighed average %.(+) Increase/(-) decrease in pressure of pump due to variation in delivery pressure divided by 100. (Sample calculation shown at annex…….).	C	C=1+((D2 -D1)/D1)
7.	Base line energy consumption corrected for water delivery pressure variation (E).	KWH/ KL	E=C*e
8.	Energy Savings (S)	KWH	S=E*V-K
9.	Base line power tariff (T) Rs.5.12 (The base line tariff will be change as per the tariff mentioned in the electricity bill of that month)	Rs./ KWH	T= 5.12
10.	Financial savings at base line tariff (F).	Rs.	F=S*T
11.	Guaranteed minimum saving of power units consumption due to installation and operation of energy efficient pumps 10% of Base Line Power consumption (U)	KW	U= (e*V)*0.1
12.	Corresponding minimum financial saving based on base line tariff (R).	Rs.	R= U*T
13.	Balance savings available for sharing (B)	Rs.	B=F-R

14.	% Share to be passed on to the contractor from the sharable savings as per the approved bid of the lowest contractor (P).	%	P
15.	Payment due to the contractor for the month (G)	Rs.	G=B*P/100
16.	Saving accrue to UJS.	Rs.	F-G

Note: *If 'G' is less than 'R', no payment shall accrue to the contractor and the short fall, (R-G), shall be added to the base line savings to be retained by the UJS during the subsequent month.

(a) Base line power tariff has been taken as Rs. 5.12 Per K.W.H. However calculation of payment would be done on actual power tariff of UPCL prevailing in that month.

Power tariff on which payment calculated shall be made inclusive of Unit Power Charges, Electric Duty, Water Cess, and Urban Cess, which are based on power consumption. In future if UPCL Changes the power tariff pattern calculation of payment to the contractor shall be made only on the items which are based on power consumption.

(b) For the surface pumps installed at Pump Houses the delivery pressure may change with the change of Delivery Line length, place , Line size etc., that shall be accounted for, by applying proportionate correction factor. For the First 12 Months, the Delivery pressure shall be taken as that given in the base line data. Measurement of delivery pressure shall be taken on first day of the 13^{th}, 25^{th}, Months to calculate the correction factor to be worked out for its application for subsequent twelve months.

(c) The tenderer may make certain modifications on the existing system of Pumping Station to achieve the saving in the energy consumption. This saving in energy would be given to the contractor as agreed in the agreement of the tender. Effective saving in energy consumption at pumping station would be shared as per the conditions of the contract and agreement of the tender. For repair rehabilitation and renovation works a period 12 months in the beginning of contract would be given to the contractor from the date of taken over of the scheme. During this period, the shut down and closure required for changing any unit would be given to the contractor as and when asked but keeping in view that overall production on this project does not affect or hamper. The order for shut down would be given in writing by the Engineer in charge after consultation with UJS, . The no. of shut downs and period of each shut down shall be decided by Engineer in charge keeping in view the nature and quantum of work involved.

(d) Power at the rated voltage at pumping stations would be provided to the tenderer by UPCL power supply it is assumed that 23 hours power supply at rated voltage would be available at these pumping stations. If the failure of power supply is more than two hours the daily scheduled water production might reduce proportionately.

(e) The tenderer will take prompt and immediate action to restore the power supply at pumping stations in case of power failure or short tripping in the power supply, and would try his level best to maintain a minimum water production of notified flow on this water supply scheme, by operating more number of pumps from the stand by unit installed at pumping station. In case of unavoidable and unforeseen circumstances the daily scheduled water production on the scheme shall be proportionately reduced. The tenderer will have to quote sufficient and effective reasons for this reduced production on the scheme in writing before the Engineer in- charge, and the Engineer in-charge will then decide that the reasons quoted for reduced proportionate raw water production have sufficient ground to allow the tenderer for giving reduced water production on this scheme.

(f) In case if the water at water pumping station is not available due to natural disaster in that case payment to the contractor will be made based on the minimum water production.

(g) The payment of Electromagnetic Flow Meter installed by the contractor will be made by the DSCL only after successfully installation and testing.

(h) The monthly payment to the contractor for O&M of this project would be made after receiving the monthly bill subject to the availability of budget in the respective budget head of payment on the scheme.
Contractor will not claim any kind of interest on the delay of the payment made by the DSCL for want of appropriate budget.

(i) Contractor shall be solely responsible for preventing illegal connections from power lines. However, administrative support would be provided by the DSCL& UJS as per rules to keep law & order situation under control subject to contractor demands for the same and deemed fit by the DSCL/UJS.

(j) The old installed pump machinery , electrical installation, cables, all types of pipes and specials reinstalled from the pumping stations during the process of replacement and repair and contractor don't want to use this material , would be the property of the UJS and would be handed over to the UJS .

(k) No separate payment for O & M of Tube Wells & pumping station shall be made to the contractor other than the pumping stations allotted for O&M Work only.

19. Maintaining power factor at all pumping station.

19.1 Maintaining minimum power factor as 0.90 or above as desired by UJS. Power capacitor of desired capacity are already installed which have to be maintained by contractor so that the power factor is not lowered down in any case below 0.90. Contractor is free to use modern technology to improve power factor.

19.2 The power factor should be maintained to the desired limit of 0.90 at Water Pumping Stations of, Dehradun. The incentive given by the UPCL for maintaining power factor above 0.95 will be shared equally between the DSCL and contractor.

19.3 The power factor improvement system should be capable to maintain the desired power factor within prescribed limits irrespective of the condition of the operating system.

19.4 To regulate, calibrate, inspect and check the meter reading for power factor replacing the damaged/defective equipment/parts from time to time for proper maintenance of power factor for which extra payment will not be made by the DSCL.

19.5 The capacitors should be installed as per required rating capacity free of cost by the contractor with approval from the Engineer-in-charge where power factor is lower than 0.90.

19.6 The contractor has to arrange the replacement of Burnt/Damaged capacitors and other equipment free of cost. No extra payment will be admissible to the contractor for this work.

19.7 Contractor is required to study the whole plant particularly in respect of likely surcharge/incentive on account of power factor for keeping power factor more than 0.90. If he thinks that capacity of installation is inadequate, then he may install the additional equipment which are required to be installed to maintain the P.F. 0.90 or above while pumps in operation. Required modification at all pumping station shall be done by the contractor free of cost from the date of taking over the plant.

19.8 If the contractor fails to maintain power factor 0.90 or above, then power factor surcharge shall be recovered from running payment due to him.

19.9 Scope of work includes repair and maintenance of pipe line from CWR to CWR where both the CWR / Pump houses are under contract. No separate payment shall be made on this account

19.10 It shall include minor repair and maintenance of Tube Wells & pumping stations (civil works) new works in pumping stations and pipeline (which are part of contract) if required. These works are required to maintain the water supply uninterrupted

19.11 Contractor shall provide furniture at all the pumping stations under contract as per requirement. However quantity of furniture to provided by contractor should not less than one table three chairs and one bench.

19.12 Chlorination at CWRs under contract shall be responsibility of tenderer. Chemicals required shall be provided by the UJS free of cost; however contractor should maintain the stock register of chemical get issued from the UJS and consumed.

20. TAXES AND DUTIES

All taxes, duties, levies applicable by any act of the Government of India and/or State of Uttarakhand and/or of the local bodies on the company or its personnel, during the period of work in progress shall be of the contractor. **Tenderer should not offer conditional rebate. They should offer competitive price on DSCL terms and condition, if they offer any conditional rate the same shall not be considered for, comparison but DSCL shall avail the rebate.**

21. It shall be the sole responsibility of the contractor to rewind/ replace/repair all the pump motors and other equipment as per relevant standards for which no payment will be made by DSCL.

22. All sorts of tools & plants required for operation and maintenance of the project shall be arranged by the contractor at his own cost. The UJS will not provide any T&P. No extra payment will be allowed to contractor on this account. Contractor has to arrange all T & P required for O & M at his own cost and no claim on this account will be entertained.

23. The complete work as defined in the tender document includes maintenance, operation, periodical overhauling of pumping plant machinery, electrical equipment all associated units of plant machinery & power supply. Any associated work which has not been mentioned here in the tender document but is required or anticipated to be done by the contractor he should include cost of such in his offer. The offered rate shall be deemed as inclusive of all such items.

24. In the event of any damage/loss of life and property during the O&M of the project, the contractor shall be solely responsible and liable for compensation and damages.

25. In the event of strike by the operation and maintenance staff employed by the contractor the UJS shall be empowered to operate and maintain and pumping stations at the sole risk and cost of the contractor.

26. The contractor shall be responsible for any breakdown and appropriate amount will be recovered from his bill if the breakdown happened due to negligence of the contractor's staff. If breakdown is not attended within 12 hours for tube wells and 2 Hours for the pumps Houses, appropriate amount

27. i.e. @ Rs. 1000/- per hour per occasion will be recovered from his bill.

28. Contractor is responsible to maintain at least 90% of the desired flow in all the Zones, in event of contractor failing to maintain production with 90% of desired production in any zone, due to non operation of pumps or pumping system he shall be penalized @ Rs.1000 per day per zone. In case if the production is less than 75% of desires flow for a particular day than a penalty of Rs. 2000 per day will be imposed for a particular zone. If contractor fails to maintain production less than 50% of desired flow than a penalty of Rs. 5000/Day will be imposed. If the contractor fails to produce 75% flow of desired flow for a consecutive three days he shall be penalized Rs. 5000/Day additionally.

The period of non-availability of power at the sources shall be accounted for proportionately for comparison against the base line production in different zone during these days when power failure has occurred. Contractor will not be responsible if water is not available from water sources, or if there is failure in pipe lines or CWR/OHSR, Rising mains etc.

29. The matter regarding less supply and compensation thereof shall be decided by the DSCL, in case of any dispute, the decision of the Chief Executive Officer, DSCL, shall be final & binding upon the contractor.

30. Contractor has to carry out minor civil repair of pumping stations, building etc. as directed by Engineer in charge for which no extra payment shall be made. It also includes white washing, color washing and painting of pump house, CWR etc. twice during the contract period first after completion of one year of the contract period and second after completion of fifth year.

31. Lighting inside and outside the pump houses shall be maintained by the contractor. The faulty tube lights & HPSV lamps or lighting fixtures shall be repaired/ replaced by the contractor at his own cost. Failing to do the same, a compensation amounting to Rs. 100/- per day per site or as deemed suitable by Engineer in charge would be charged from the contractor.

32. Spares requirement for maintenance of pumping system including electrical installation at each pumping station should be kept normally in the stock. However, if found not available in stock then contractor shall have to arrange it immediately. Whenever any pump machinery or electrical accessories goes out of order the stock maintained by the contractor shall be accessible to the Engineer in charge all the time for inspection.

33. In case of dispute between DSCL/UJS & contractor matter will be referred to next higher authority, however decision of Chief Executive Officer will be final and binding upon the contractor. Recoveries will be made after final decision from the current month payment or successive monthly payment or from security deposits of the contractor.

34. In case of sudden break down Engineer In-charge will decide whether the break down or losses is attributable to contractor's poor preventive maintenance or not. If break down is found on the part of contractor then suitable cost of repair/ breakdown /losses shall be recovered from his due payments. If not rectified / replaced the losses shall be recovered from his due payments. The decision of Engineer in-charge concerned regarding cause of failure / break down shall be final. In case of difference of opinion between contractor & Engineer in-charge of DSCL. The appeal will lie with the Chief Executive Officer of DSCL, whose decision will be final. However pending as such decision, immediate action for rectification/ removal for cause of failure shall be initiated by the contractor as per terms & conditions of contract/direction of Engineer in-charge.

35. STANDING COMMITTEE FOR SETTLEMENT OF DISPUTES

If any question, difference or objection, whatsoever shall arise in any way, in connection with or arising out of this instrument, or the meaning of operation of any part there off, or the rights, duties, or liabilities of either party then, save in so far, as the decision of any such matter, as herein before provided for, and been so decided every such matter constituting a total claim of Rs. 50,000/- or above whether its decision has been otherwise provided for and whether it has been finally decided accordingly or whether the contract should be terminated or has been rightly terminated and as regards the rights or obligations of the parties as the results of such termination shall be referred for decision to the empowered standing committee which would consist of the following.

35.1 Chief Engineer UJS or his nominee (Member Secretary)
35.2 Engineer-in Charge of DSCL or his nominee.
35.3 Water Supply Expert of Project Management Consultant appointed by DSCL.
35.4 Team Leader of Project Management Consultant appointed by DSCL
35.5 Additional Chief Executive Officer DSCL(Chairman)

The Engineer-in-charge, on receipt of application along with non-refundable prescribed fee, (the fee would be two percent of the amount in dispute, not exceeding Rs. one Lac) from the Contractor, shall refer the disputes to the committee, within a period of one month from the date of receipt of application.

36. REFUND OF SECURITY DEPOSIT

The security deposit will be refunded after satisfactory completion of contract period provided the final bill has been paid for all works.

37. Records of repair and spares consumed

37.1 Machinery History Sheet Register

Contractor shall maintain a register of History Sheet of all machinery at pumping station. Contractor shall enter periodical checking, preventative maintenance, break down maintenance, material consumed, old material received back for vertical turbine pump sets, energy efficient pump sets, switch gear. Contractor shall also enter total break -down hours of pump sets before any preventive or running maintenance of centrifugal pump sets/mono blocks. History sheet register shall be get verified by representative of Engineer in charge in a month.

37.2 Inspection Register

The contractor shall maintain an inspection register at Pumping Station. Contractor should produce the register whenever UJS visit the head works. Compliance with date and time shall have to be recorded.

37.3 Register for Recording Maintenance Work at Pumping Station

The contractor shall maintain a register at pumping station showing details of work done at pumping station, other than preventive and maintenance. The contractor shall also enter the material consumed for that work.

37.4 Other Records

The contractor has to maintain all other records as directed by the Engineer in charge. The contractor shall provide various information in prescribed performa to be sent to higher authorities on Daily/weekly/fortnightly/monthly basis.

38. All new energy efficient pump sets, installed by the contractor shall be the property of the DSCL/UJS at the end of the contract period. Any new mechanical and electric part/ equipment etc. installed by the contractor during contract period at pumping station and pipe lines at Pumping Station shall also be the property of the DSCL/UJS.

39. All the pumping sets installed at pumping station shall be operated as per the schedule prescribed by Engineer-In-charge and as per the availability of the electrical power at adequate voltage. The engineer in charge, may also pre fix time schedule of 'start & stop" of any of the pumping set according to the demand of water or to facilitate repair & maintenance of the pipelines or to preventive maintenance.

40. The existing installed pumping machinery or electrical equipment taken out from the source/ pumping station by the contractor shall be the property of the DSCL/UJS and should be immediately handed over to the representative of the Engineer in-charge at the location to be decided by EIC.

41. The contractor, shall be liable for all defects, faults, break downs etc occurred or noticed prior to the 12.00 mid-night, up to the date of expiry of contract. However, the UJS has to notify all such defects/liabilities of contractor within 20 days of taking over of facilities.

42. Till the date of expiry of the contact period, the contractor shall do all routine and periodic maintenance.

43. Within 30 days of the expiry of the contract period, the DSCL shall prepare the final estimates for recoveries if any, from the contractor and shall also prepare the final bill for the work.

44. If the recoveries to be done by DSCL are more than the final bill to be paid, the contractor shall deposit the required amount to be recovered from contractor or this amount shall be recovered from the securities/guarantees etc. with the DSCL as deemed suitable.

45. After the date of expiry of contract and recoveries of all dues payable by the

contractor, the Engineer in Charge shall issue a "Certificate of taking over."

46. Maintenance of electromagnetic flow meter and bulk water meter will be done by the contractor which includes all type of repair, replacement and calibration. If power meter installed by UJS goes out of order due to any electrical fault, it will be replaced by the UJS for which no charges will be recovered from the contractor. But if the sub energy meters installed by contractor go out of order, then same shall be repaired/ replaced by the contractor at his own cost.

47. When energy meter of is found out of order, the energy consumption during such period shall be taken as average of the previous 7 days, based on energy consumed per KL of water produced.

48. The Electromagnetic flow meter supplied by the contractor must be of the make approved attached in RFP. Supplied meter must be as per the technical specification provided in "Technical Specification" section of this document.

49. In event of water meter going out of order, the water production / transmission during such period shall be taken on the average water production/ transmission during the previous seven days based on the quantity of water produced/ transmitted per KWH of energy consumed.

50. In case, it is not possible to take reading (s) of water meter(s) or energy meter (s) on particular day(s), due to unavoidable circumstances the reading (s) taken on subsequent day shall be used to calculate the water production and energy consumption during this period, Production of water and energy consumption at pumping station of this project during such day (s) when taking reading (s) was not possible shall be calculated on proportionate basic.

51. If doubt is raised by any of the parties, in reference to the correctness of the bulk water meter, an ultra sonic flow meter or the master meter shall be installed in series and the reading of the meter under question shall be compared with other available flow meter which has been calibrated earlier with working meters (the calibrated ultra-sonic meter or master meter shall be arranged by the contractor). If the difference is within ± 4%, no change of meter will be done. If it is beyond this limit, the meter shall be replaced within 24 hours by the contractor.

52. Essential spare parts & electrical components, (panels etc) and energy efficient pump sets to be kept as standby arrangement by the contractor to ensure minimum break down period in case the electrical equipment or pump installed at any of the pumping stations going out of order.

53. If the contractor fails to provide the minimum personnel responsible for O&M of the facility as defined in scope of work, the amount payable for each month may be reduced proportionately to the schedule of deployment of personnel proposed by the contractor or as per the actual expenditure incurred by the DSCL to fulfill

the duties and liabilities of the contractor under this contract, whichever is more, at DSCL's discretion.

54. In event of break down, resulting in suspension of supplies the contractor shall take such action as may be reasonable and necessary at his cost and expenses, to prevent, avoid, or mitigate injury damage and/or loss as soon as possible and rectify the defects/repair the facilities at his own cost, so as to commence the supplies at the earliest possible. The contractor must report all such incidents, indicating the cause and contractor's response thereto, to the DSCL/UJS.

55. The contractor shall utilize its personnel and all his resources to take such action as may be reasonable and necessary in the event of a break down. The contractor must incur all expenditure and take all measures, which are necessary (in accordance with good industrial practice) in case of break down, effecting the facilities and/or to safeguard lives or property.

56. The DSCL shall be entitled to terminate this contract on account of any or the following reasons attributable to the contractor, unless arising as a result of a force majeure event, or any cause related to the obligations of the DSCL.

a) Not maintaining the desired quantities of flow (discharge) at pumping station of this scheme in continuous period and/ or for a continuous period of more than 15 days.
b) Repudiation of this contract by the Contractor or the evidencing of an intention by the contractor not to be bound by the terms of this contract.
c) Appointment of a provisional liquidator in providing for winding up of the contract unless such appointment has been set aside within 45 days.
d) The contract is ordered to be wound up by a court or files a petition for voluntary winding up except for the purpose of amalgamation or reconstitution provided that such amalgamation or reconstitution does not adversely affect the ability of the amalgamated or reconstituted entry to perform its obligations under this contract, the successor has assumed in writing unconditional responsibility for the performance of the contractor's obligations and the technical, financial and operating capability of the successor is satisfactory to the DSCL.
e) The contractor abandons the operation of the facility.
f) Under conditions expressly mentioned in any Clause of this conditions of contract for operation and Maintenance.
g) In case of illegal connections and law and order situations not attributed to the contractor activity all necessary support shall be extended by the Government to the contractor and their workers

57. Escrow Account

The Authority shall prior to the Appointed Date of ESCO work open and establish an account ("**Escrow Account**") with a Bank ("**Escrow Bank**") in accordance with this Contract read with the Escrow Agreement.

57.1 For the purpose of opening and operating an Escrow Account, the Authority shall

enter into an agreement with the Concessionaire and the Escrow Bank (" **Escrow Agreement**") in accordance with the format provided in Schedule M to this Contract. The Escrow Agreement shall remain in full force and effect until the Escrow Account is not discharged in accordance with the terms contained thereof.

57.2 The Authority shall at all times throughout the Contract Period maintain in the Escrow Account, a balance of at least an amount equivalent to {2 (two)} months' estimated Fee payable to the Concessionaire as a revolving fund and for this purpose, the Authority shall replenish with its own resources, any deficit that may arise in maintaining such balance of funds.

57.3 Deposit in Escrow Account

- The Authority shall deposit or cause to be deposited the following inflows and receipts into the Escrow Account:

- [any deposits by the Authority to maintain an amount equivalent to {2 (two)} month's estimated Fee in the Escrow Account;]

- all payments by the Authority including insurance claims, if any, received;

- Dues towards Termination Payment to the Concessionaire; and

57.4 Withdrawal during Agreement Period

- The Concessionaire shall, at the time of opening the Escrow Account, give irrevocable instructions, by way of an Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter
- Intervals as necessary, and if not due in a month then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in the month when due::
- all taxes due and payable by the Concessionaire for and in respect of the Project;
- any reserve requirements set forth in the Financing Agreements; and
- Balance, if any, in accordance with the instructions of the Concessionaire.
- The Concessionaire shall not in any manner modify the order of payment specified in Clause 27.3.1, except with the prior written approval of the Authority.

57.5 Withdrawal upon Termination

58.5.1 Notwithstanding anything to the contrary contained in the Escrow Agreement upon Termination of this Agreement, all amounts standing to the credit of the Escrow Account shall be appropriated in the following order.

(a) all taxes due and payable by the Concessionaire for and in respect of the Project;

(b) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire;

(c) retention and payments relating to the liability for defects and deficiencies set forth in Article 37;

(d) outstanding Debt Service including the balance of Debt Due;

(e) outstanding Subordinated Debt;

(f) incurred or accrued O&M Expenses;

(g) any payments due and payable to the Authority;

(h) any other payments required to be made under this Agreement; and

(i) balance, if any, in accordance with the instructions of the Concessionaire:

57.6 Closure of Escrow Account

The Escrow Bank shall, at the request of the Contractor made on or after the payment by the Contractor of all outstanding amounts under the Contract Agreement including the payments specified in above Clauses, and upon confirmation of receipt of such payments, close the Escrow Account and Sub-Accounts and pay any amount standing to the credit thereof to the Contractor. Upon closure of the Escrow Account hereunder, the Escrow Agreement shall be deemed to be terminated.

58.SPECIAL CONDITION OF CONTRACT (Operation and Maintenance)

58.1 DEFINITION RELATED TO O&M)

58.1.1 Adverse Operating Period The period, during which water and/or electricity are/is not provided by the UJS.

58.1.2 Commencement of O&M Period

The Period of Operation and maintenance under this shall commence from day of taking over the system within 10 days after the date of written order to commence the O&M

58.1.3 Operation and Maintenance Contract Period Ten years from the commencement of O&M period as per clause 55.2 above or as extended as per provision under clause below.

58.1.4 Date of Issue of Taking Over Certificate

After the completion of O&M Period, for contract as per clause 55.3 above, provided that the contractor has fulfilled the provision of clause 56.2 of this contract.

58.1.5 Good Engineering Practice

In respect of the Contractor, its subcontractors, and all other such third party agents of the Contractor, practices, methods, techniques and standards, as changed from time to time, that are generally accepted for use internationally for canal, pump house along with its electrical &- mechanical equipment(s), all type of pipe line and pipe appurtenances, all type of meters and control equipment(s), road, and all other existing as well as addition/rectification in the facility during operations and maintenance, taking into account conditions in India.

58.1.6 Non-conformance Event

An occasion on which the Contractor does not supply the notified per day flow to the respective off-takes.

58.1.7 Operations and Maintenance Services

All Services which are the responsibility of the Contractor and are required to fulfill the obligation as detailed in "scope of work" and 'Specifications' given in this bid document and/or in the approved operation and maintenance manual and as defined in any other clauses of this contract.

58.1.8 Expiry of Contract Period

As per Clause 55.3 above (or) as extended, as per the provisions of Clause 56

59. EXTENSION & EXPIRY OF CONTRACT

59.1 Extension of Operation and Maintenance Period

The Operations & Maintenance Period can be extended upto another period of 5 years based on such terms as acceptable to both Parties ("The Contractor" and the "DSCL")

In such an event, either Party ("The Contractor" or the "DSCL") shall notify its intention to extend the Operations & Maintenance Period at least one month before its expiry and commence discussions with the other Party to arrive at a mutually agreed basis of terms and conditions for the extended period.

59.2 Expiry of the Operation and Maintenance Period & Taking Over By the DSCL

59.2.1 Three month prior to the expiry period, the DSCL/UJS will notify the contractor, the maintenance required for the facilities including all structures and road, plants, materials and equipment(s) therein, so that the facilities may be taken over in an acceptable physical conditions (physical conditions in reference to the initial physical condition at the start of O&M period, after accounting reasonable wear and tear during operation) and in operation conditions.

59.2.2 Not-withstanding to the notification done by DSCL/UJS as per clause 56.2.1 above, the contractor shall repair, maintain and operate the facilities as per the terms and conditions of this contract, till 12.00 Noon upto the date of expiry of contract period.

59.2.3 The contractor, shall be liable for all defects, faults, break downs etc occurred or noticed prior to the 12.00 Noon, upto the date of expiry of contract, even if the facilities are taken over by the DSCL/UJS subsequently, due to expiry of contract period, as per clause 56.2.2 above. However, the DSCL/UJS has to notify all such defects/liabilities of contractor within 30 days of taking over of facilities.

59.2.4 Till the date of expiry of contract period, the contractor shall do all routine and periodic maintenance as prescribed in the O&M manual, in force, at the time of expiry of contract.

59.2.5 On expiry of contract, the contractor shall hand over all spares, tools and for which he has been paid as well as those supplied by UJS.

56.2.1 After the expiry of the contract, the log books and all the other records prepared during the O&M period, shall be handed over to the UJS, in acceptable electronic formats and in hard copies, within 15 days of expiry of contract. Copy of the log books related to performance of units shall be provided every month.

59.2.6 If the contractor does not comply with any of the provisions from 50.2.1 through

59.2.7 above, or any other requirement in pursuance of Good Industrial Practices, the Engineer –In-charge shall estimate the cost of liabilities due to violation of any of the provisions of this contract. Such estimates made by Engineer-In-Charge shall be final and binding for the contractor. However in a reasonable endeavor, such estimates shall be communicated to the contractor, within 30 days of expiry of the contract. The contractor shall be given an opportunity to rectify the damages through his staff/agents, or for supply of required material provided such rectification of defects on maintenance do not require any shut down of the system, within 60 days of such notification of estimates by UJS/DSCL.

59.2.8 Within 90 days of expiry of the contract period as per clause 55.2, the DSCL/UJS shall prepare the final estimates for recovery from the contractor and shall prepare the final bill for the work.

59.2.9 If the recoveries to be done by DSCL are more than the final bill to be paid, the contractor shall deposit the required amount to be recovered from contractor or this amount shall be recovered from the securities/guarantees etc. with the DSCL as deemed suitable.

59.2.10 After the date of expiry of contract and recoveries of all dues payable by the contractor, the Engineer-In-Charge shall issue a “Certificate of Taking over.”

60. OPERATIONS

60.1 Variability of Output

DSCL/UJS at time to time, shall notify the regulation in drawl at the inlet of system; and contractor would be required to operate & maintain complete system which includes regulation of pumping operations for delivery of water to various beneficiaries without being lost through overflow, theft or pilferage.

In the event of planned closure or closure due to unprecedented circumstances or inadequate/non availability of water / non availability of power; closure of system, the DSCL shall be liable to pay to the Contractor the Basic Service Charge.

60.2 Personnel

The Contractor shall appoint the minimum staff defined in scope of work of O&M in Part-A. The names along with the qualifications and experience of the minimum staff to be provided as per the conditions of contract shall be got approved from the DSCL. If during the O&M period any personals earlier approved by UJS are required to be changed, the bidder shall provide CV's of personals of similar or more experience than that of the person to be replaced for approval of DSCL. Only **after such approvals, the bidder shall appoint the person on job.**

The Contractor's Representative shall be authorized and empowered to act for and on behalf of the Contractor on all matters relating to the rights and obligations of the Contractor during the O&M Period. In all such matters, the Contractor shall be bound by the written communications, directions, requests and decisions given or made by the Contractor's Representative.

The Contractor's Representative will direct and manage the Contractor's resources and have full responsibility for the operation, maintenance and administration of the Facility.

The Contractor shall identify, interview and hire sufficient number of qualified and trained (and if required, licensed) personnel to perform its obligations during the O&M Period.

All Contractor's personnel employed at any time during the O&M period will be provided by the Contractor. The UJS is not liable for personnel in any way and cannot be held responsible in the event of litigation of any sort between the Contractor and members of plant personnel or their representatives or non performance of obligations due to any strike or other industrial action by the Contractor's workmen (including those of its subcontractors, suppliers etc).

The Contractor undertakes to comply with applicable legislation and the code of labour law on matters of health, hygiene and safety, and shall assume responsibility for works required in the event of any change in applicable regulations and shall also require its subcontractors to comply with this clause.

If the Contractor fails to provide the minimum personnel responsible for O&M of the Facility as defined in scope of work, given in this tender document, the Basic Service Charge payable for each year may be reduced proportionately to the schedule of deployment of personnel proposed by the contractor or as per the actual expenditure incurred by the DSCL/UJS to fulfill the duties and liabilities of the Contractor under this contract, whichever is more, at DSCL's discretion.

60.3 Maintenance, Repairs and Replacements and Additions to the Facility

(a) Maintenance, Repairs and Replacements

The Contractor at its own cost and expense shall maintain and repair the facility in good working condition, in a neat & orderly way including the cleanup of litter and debris on a daily basis or more frequently, shall maintain a spare parts inventory necessary to performance maintenance required as per the Operation and Maintenance Manual and/or scope of work, and shall maintain

the aesthetic quality of the Facility as originally constructed and in accordance with the Technical Specifications, with due allowance for reasonable wear and tear and depreciation. The Contractor shall provide or make provisions for all labour, materials, and equipment which are necessary for the normal operation and maintenance of the facility and shall conduct the required predictive and preventive maintenance of the Facility consistent with the Operation and Maintenance Manual and/or scope of work. The Contractor shall maintain maintenance logs in accordance with the preventive maintenance plan set forth in the Operations and Maintenance Manual and as defined in scope of work and shall produce monthly copies of the same to DSCL/UJS.

a) Additions/Modifications to the Facility

During the currency of the contract for O&M, the UJS at its own or by way of engaging other contractor(s), may undertake work of addition/modification in the facilities. The contractor under this contract shall not only manage to continue operation & maintenance of the system but shall also reasonably extend co-operation to such agency(ies) for any of job related to intended

addition/modification. The O&M of the additional/modified facilities would be borne under this contract; however contractor would be absolved from its' defect liability.

60.4 DSCL/UJS's rights

60.4.1 Inspection

(i) The DSCL/UJS may periodically check the operation of the Facility or designate an organization of its choice at the cost of DSCLto carry out inspections of the Facility to satisfy itself that the Contractor is performing its obligations with due diligence.

(ii) Any assistance required for such inspection of the Facility shall be provided by the Contractor at its own cost.

(iii)The DSCL/UJS representative can inspect the facility at any moment during the O&M period.

60.4.2 Technical Audit

The DSCL has the right to conduct a technical audit of the Facility and to perform any analysis or inspection it deems necessary. Before any such inspection, the DSCL/UJS shall give a prior written notice of three days to the Contractor. The Contractor shall at the Contractor's sole cost and expense provide all assistance the UJS requires to complete these inspections. Such audits may cover all or any of the obligations of the Contractor, including but without limitation to,

a) Verification of the system capacity save for normal wear and tear during the O&M Period

b) Verification of the performance standards and useful life of the individual assets of the Facility, save for normal wear and tear during the O&M Period

c) Testing and verification of the water losses

d) Energy Audit

60.4.3 Facility Visits

a) At the end of each twelve-month period, or at the initiative of the DSCL/UJS, a visit shall be organized so that both Parties can check the condition of the installations at the Facility.

b) A report shall be drawn up to record the opinions of both Parties. The DSCL reserves the right to call in equipment manufacturers or specialized technicians for these visits.

c) These visits shall provide an opportunity for examining maintenance programs and operating procedures and improvements requiring additional investments.

61. Other Contracts

a. The Contractor shall not delegate its responsibilities hereunder nor subcontract any part of the services to be provided by him hereunder without the prior written consent of the DSCL. If the Contractor subcontracts its responsibilities hereunder or subcontracts any part of the services to be provided by him hereunder with the consent of the DSCL, the Contractor shall not be relieved from any liability or obligation under this Contract and the Contractor shall continue to be responsible for the act, defaults or negligence of any sub-contractor as fully as if it were the acts, defaults or negligence of the Contractor, its officers, employees or agents.

b. The period of validity of any contractual commitment for provision of services or material or personnel to the Facility or any subcontract entered into by the Contractor with any party shall not and shall not extend beyond the Termination Date.

c. All such contractual commitments to be entered into by the Contractor should be freely assignable to the DSCL or to any other contractor, at the discretion of the Contractor.

d. The Contractor cannot create a charge on any assets of the DSCL/UJS or the assets purchased under the Contract.

62. BREAK DOWNS

62.1 Contractor Action and liabilities

i. In the event of break down, resulting in suspension of supplies and also endangering life and / or property, the contractor shall take such action as may be reasonable and necessary at his cost and expenses, to prevent, avoid, or mitigate injury damage and / or loss as soon as possible and rectify the defects / repair the facilities at his own cost, so as to commence the supplies at the earliest possible. The contractor must report all such incidences, indicating the cause and contractor's response thereto, to the DSCL/UJS.

ii. The contractor shall utilize its personnel and all his resources to take such action as may be reasonable and necessary in the event of a break down. The contractor must incur all expenditure and take all measures, which are necessary (in accordance with good industrial practice) in case of break down, affecting the facilities and / or to safeguard lives or property.

iii. The contractor shall be liable to pay all type of claims arising and raised for any loss of lives / property attributed to such break down, unless such break down has resulted due to force majure.

62.2 Time for Rectification of Defects:

Not limiting to any events listed below the contractor shall be charged for delayed commissioning of the system, after a break down. The reduction in rates for delayed commissioning of events listed below, shall generally be applicable, but can be condoned by the Superintending Engineer after considering the grounds for delay. For events not listed below, the Additional Superintending Engineer shall decide the reduction in rates on the merit of case and after considering the action taken by the contractor. The decision of Superintending Engineer, shall be binding on the contractor**.**

63. TERMINATION

63.1 Contractor's default

The DSCL shall be entitled to terminate this Contract for the following reasons attributable to the Contractor, unless arising as a result of a Force Majeure Event, or any cause related to the obligations of the DSCL

a) Non performance of material obligations or failure to perform material obligations under this Contract

i.e. for not maintaining the desired quantities of flow at all the off-takes in a continuous period of more than 15 days.

b) Repudiation of this Contract by the Contractor or the evidencing of an intention by the Contractor not to be bound by the terms of this Contract.

c) Appointment of a provisional liquidator in providing for winding up of the Contractor unless such appointment has been set aside within 45 days.

d) The Contractor is ordered to be wound up by a court or files a petition for voluntary winding up except for the purpose of amalgamation or reconstruction provided that such amalgamation or reconstruction does not adversely affect the ability of the amalgamated or reconstructed entity to perform its obligations under this Contract, the successor has assumed in writing unconditional responsibility for the performance of the Contractor's obligations and the technical, financial and operating capability of the successor is satisfactory to the UJS.

e) The Contractor abandons the operation of the Facility.

f) Under conditions expressly mentioned in any Clause of this Conditions of Contract.

63.2 Consequences of Termination by DSCL

If the DSCL, with reasonable grounds, terminates the contract under clause 65.2 above, the Security Deposit, and any other sums of the contractor with the DSCL, shall be fortified and action shall be taken against him as per clause 3 of General Conditions of Contract, if deemed appropriate.

64.PAYMENTS

Payment will be admissible to the contractor in following modes for O&M

(i) BASIC SERVICE CHARGE (BS)

The Basic Service Charges shall comprise all expenses for operation and maintaining the Facilities plus annual energy audit, as provided in the scope of work for O&M of "Scope of Work and Technical Specifications" of bid document. In addition to the cost of material/equipment spares, all other expenses such as expenses for administration and management, permanent & temporary staff, running office, repair & maintenance of all civil, mechanical, electrical & instrumentation structures/equipments/installations, etc. and all other incidental and indirect expenses for the works detailed in "Scope of Work for O&M" or for works otherwise required as per good engineering practices for Operation and maintenance of the entire system, (except for the cost of electricity & cost of raw water (if any) payable directly by the DSCL, item covered under © below) are included in this Basic Service Charges. This payment would be made on monthly basis, determined on proportionate basis to the approved rates for concurrent year.

The Basic Service Charges would be lump sum offer of contractor in reference to prices quoted in Part-B of this tender document.

The payment shall be in accordance with the following formula: SF = BS – RR
Where:
SF = Service Fee
BS = Basic Service Charges,
RR = Reduction in Rates or any other deduction as per terms and conditions of contract

(ii) Billing Period for BS

Billing Period for BS means each calendar month, except:

(iii) For the first Billing Period shall begin on the Date of commencement of contract as defined in clause 59.2 and shall continue till the last day of the respective month;

(iv) The last Billing Period shall start on the first date of the month of expiry of contract and end on the date of expiry of contract as defined in clause 59.8 .

Any computation made on the basis of a Billing Period shall be adjusted on a pro rata basis to take into account any Billing Period of less than the actual number of days in the month to which such Billing Period relates. For this purpose, the sum stands approved for lump sum basis for one complete year would be divided by the days in the corresponding year to determine pro-rata sum i.e. to be paid on monthly basis.

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(v) Reduction of Rates

a. Inadequate Operation of Pumps: Except in case of failure of power, reduction in operating hours of pumping machinery as compared to average notified hours (to be calculated on monthly basis) of the system, shall attract a compensation @ Rs 10,00/- per hour.

b. Non maintenance of Power Factor: The contractor shall maintain power factor at each of pumping stations up to the requirement of power supply companies, failing which he shall be liable for deduction equivalent to the surcharge/ penalties / levies etc. imposed by the power supply company for not maintaining the required power factor.

c. Delay in repair/maintenance: Any of facility not having standby unit shall have to be repair/maintain within reasonable short duration (to be finalized by EIC); similarly equipment having standby units shall be repair/replaced within a period of 30 days from the day of its' damage/identification of defect; failing either of these would attract compensation @ Rs 500/- per day of delay for each such activity.

d. Inadequate Personnel: Proportionate reduction due to finding personnel less than minimum prescribed in this tender document.

e. Part/Non fulfillment of responsibilities: Compensation on pro-rata basis as assessed by EIC would be levied & recovered from the contractor for part/non fulfillment of his responsibilities.

f. Fall in efficiency of pumping sets: Reduction in the efficiency @2% per year is admissible from the base efficiency measured at the start of contract (within 1st month from commencement of O&M). Recovery @ 1-½% of total lump sum annually payable amount of Basic Service Charges shall be made per 1% drop (prorate in case of fraction) in the corresponding average efficiency per pumping station from the above admissible limits of reduced efficiency. However, such reduction would be limiting to 10% of gross basic service charges payable annually.

(vi) DOCUMENTS REQUIRED FOR PAYMENT:

The contractor shall submit following documents in duplicate along with the invoice/bill. For Payment of Lump Sum Basic Service Charges

- ✓ Copy of logbooks of each pumping station,
- ✓ Details of observations during patrolling of pipeline/ canal
- ✓ History of repairs and maintenance jobs undertaken during the month,
- ✓ Status of overflow conditions happens during the period
- ✓ Other documents required by the Engineer-in-charge. For Payment of Separate payables for Major Repairs
- ✓ Technical details provided by manufacturer
- ✓ Manufacturer's guarantee certificate
- ✓ Purchase invoice indicating details of equipments, material manufactured, supplied and installed or work carried out, supply value of such material or equipment or value of such work carried out and amount claimed.
- ✓ Other documents required by the Engineer-in-charge.

65. DEDUCTIONS

67.1 Taxes & Duties: The Contractor shall be responsible for payment of all taxes/duties, labour cess or any other levies imposed by the Government and assessed as due and payable by the Contractor associated with the carrying out of the services. Notwithstanding the provisions of any Clause of this Conditions of Contract for Operation and Maintenance, the UJS shall be entitled to withhold or deduct from payment to the Contractor any amount demanded by the competent authority.

67.2 Statutory Deductions: The DSCL is required to make statutory deductions at source from all running bills and final bill as in force through relevant statutes in force from

time to time at the rates prescribed therein.

67.3 **Others:** Any other deductions to recover any reduction in rates or any other DSCL's claims accrued as per the contract or in respect to any other liabilities arising, shall be deducted from subsequent interim payments or final payments or from the securities with the DSCL.

66. SECURITY DEPOSIT

66.1 On Lump Sum agreed Payment: The provisions of Clause 1 of General Conditions of Contract shall apply to the Lump Sum approved sums towards Basic Service Charges , for the deduction to be made in reference to the Security Deposit

66.2 On Separate Payables for Major Repairs: However, 10% of the sums payable for shall be deducted separately at the time of actual payment.

66.3 Refund of Security Deposit: The Security Deposit amount, deducted as per 68.1 and shall be refunded within 30 days after the taking over certificate has been issued in pursuance of clause 59.4 above and or after expiry of defect liability period, whichever is later, provided the final bill has been paid.

67. DEFECT LIABILITY OF SPARES/EQUIPMENT SUPPLIED FOR REPLACEMENT

The Defect liability period of the spares/equipment supplied by the contractor for want of replacement/inventory management shall be of 12 months from the date of their installation. Contractor shall be responsible for satisfactory performance of such spares/equipment under all operative conditions for the duration of defect liability period, except for damage due to unprecedented natural calamities. Any defect/damage in case pointed out by EIC in the spares/equipment so supplied during the course of their respective defect liability period, the contractor shall be responsible to replace the same with fresh procurement without any claim. However, if the contractor fails for such replacement; the EIC shall be at liberty to get it replaced and deduct the payment incurred thereupon from the dues/deposits of the contractor.

68. INDEMNIFICATION

68.1 The Contractor to indemnify the DSCL/UJS against the following:

a) The Contractor shall at its own expense make good any physical loss or damage to the Facility occasioned by it in the course of the performance of its obligations under this Contract if and to the extent such loss or damage is caused by the misconduct or failure to follow Good Engineering Practices of the Contractor, any sub-contractor or their respective agents or employees.

b) The Contractor shall indemnify, defend and hold harmless the UJS and DSCL and its officers, employees, agents and affiliates against any and all claims of loss, damage and expense of whatever kind and nature, including all related costs and expenses incurred in connection therewith, in respect of personal injury to or death of third parties and in respect of loss of or damage to any third party to the extent that the same arises out of:

(i). Any breach by the Contractor of its obligations hereunder;

(ii). Any negligent act or omission on the part of the Contractor, its subcontractors or their respective agents or employees; and

(iii). Any willful misconduct or breach of statutory duty on the part of the Contractor, its

subcontractors or their respective agents and employees.

(iv). Any other event where such indemnification has been expressly mentioned in this Conditions of Contract for Operation and Maintenance.

c) The Contractor shall indemnify, defend and hold harmless the DSCL/UJS and its, officers, employees, agents and affiliates against any and all claims of loss, damage and expense of whatever kind and nature, including all related costs and expenses incurred in connection therewith in respect of the death or injury to any person employed by the Contractor or its subcontractors in connection with the performance of the Contractor's obligations.

The Contractor shall indemnify the DSCL/UJS against all losses and claims in respect of:

(a) Death of or injury to any person, or,

(b) Loss of or damage to any property which may arise out of / in consequence of the Operation and Maintenance of the Facility and the remedying of any defects therein, and against all claims proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions below

(i). The permanent use or occupation of land by the Facility, or any part thereof.

(ii). The right of the DSCL to execute the Facility, or any part thereof, on, over, under, in or through any land.

(iii). Damage to property, which is the unavoidable result of the operation and maintenance of the facilities, or the remedying of any defects therein, in accordance with the contract.

69. INTELLECTUAL PROPERTY

All Intellectual Property conceived, originated, devised, developed or created by the Contractor specifically for the Facility or the carrying out of the obligations under this Contract shall vest in the DSCL/UJS as sole beneficial owner and shall be disclosed to the UJS upon its [the Intellectual Properties] coming into existence.

Source code for computer programmers and associated documentation, storage media shall be made available to the DSCL/UJS by the Contractor free of cost

Any Intellectual Property of the UJS that is required in connection with the performance of the obligations of the Contractor shall be made available to the Contractor free of charge for the purposes of this Contract alone

The Contractor shall, at its own cost and expense, ensure availability at all times during the Term of this Conditions of Contract for Operation and Maintenance, of any proprietary spares/consumables/equipment that it may have sourced for purposes of ensuring proper functioning of the Facility as per this Conditions of Contract for Operation and Maintenance.

The Contractor shall, as far as practicable, use its best efforts

(i) To procure that Intellectual Property owned or developed by third parties and utilized by the Contractor in connection with the performance of its obligations under this Contract for the purpose of operation and maintenance of the Facility but for no other purpose on reasonable terms

(ii) To ensure that no Intellectual Property of a third party is otherwise used in the performance of the Contractor's obligations under this Contract without the approval from the DSCL/UJS.

On Termination of this Contract for Operation and Maintenance, the Contractor shall transfer all such Intellectual Property whatsoever to the DSCL/UJS and/or to the Successor Concessionaire at the discretion of the DSCL.

Performance Bank Guarantee

[Guarantor letterhead or SWIFT identifier code]

Performance Guarantee No……. ***[Insert guarantee reference number]***
Date……. ***[Insert date of issue of the guarantee]***

To:
Chief Executive Officer
Dehradun Smart City Limited
777, Saatvik Tower Kaulagarh Road,
Rajendra Nagar, Dehradun, Uttarakhand

In consideration of CEO, Dehradun Smart City limited (hereinafter as the "Employer", which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) awarding to _____ ***(Name of the contractor)*** having its registered office at _____ (hereinafter referred as the "Contractor", which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators and assigns), vide letter no. _____ ***(LOA No.)*** dated _____ valued at INR _____ ***(Amount in figures and words)*** (herein after referred to as the "Contract value") the work for _____ ***(Name of the work)***. The Contractor _____ having agreed to furnish a Bank Guarantee amounting _____ ***(Amount in figures and words)*** to the Employer for Performance Security of the said Agreement.

We, the _____ ***(Name of the Bank)***, at a company constituted under the companies Act 1956 and deemed to be a banking company under the Banking Regulation Act 1949 having one of its branch office at _____ ***(Branch Office Address)*** and having its Registered Office at _____ ***(Registered Office Address)*** (herein after referred to as 'The Bank') at the request of the employer do hereby pay to the employer an amount not exceeding _____ ***(Performance Bank Guarantee Value in figures and words)*** against any loss or damage caused to or suffered or would be caused to or suffered by the Employer by reason of any breach by the said Contractor of any of the terms or conditions contained in the said Agreement.

We, _____ ***(Bank Name)*** hereby affirm that we are the Guarantor and responsible to Employer, on behalf of the Contractor, up to a total of _____ ***(Performance Bank Guarantee Value in figures and words)***, such sum being payable in the types of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand to "the bank" or any other branch of _____ ***(Name of Bank)*** without cavil or argument, any sum or sums within the limits of _____ ***(Performance Bank Guarantee Value in figures and words)*** as aforesaid without needing to prove or to show grounds or reasons for demand for the sum specified therein however, such demand shall be made within the claim expiry date i.e. _____.

We, _____ ***(Name of Bank)*** undertake to pay to the employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor in any suit or proceeding pending before any court or tribunal relating thereto, our liability under this present being absolute irrevocable and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor shall have no claim against us for making such payment.

We, further agree that no change or addition to or other modification of the terms of the Contract or related Services to be supplied there under or of any of the Contract documents which may be made between employer and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

We, the _____ ***(Name of Bank)*** further agree with the Employer that the employer 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 extend time of performance by the said consultant from time to time or to postpone for any time or from time to time any of the powers exercisable by the employer against the said Contractor and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor or for any forbearance, act or omission on the part of the employer or any indulgence by the employer to the said Contractor or any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of so relieving us.

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

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

This guarantee shall be valid until _____ MONTHS (i.e.) 60 days following the Completion date of the Contract i.e. till _____including any warranty/Operation and Maintenance obligations, and any demand for payment under it must be received by us at this office on or before that date.

NOTWITHSTANDING ANYTHING CONTAINED HEREIN ABOVE:

(a) The Bank's liability under this guarantee shall not exceed the Guaranteed Amount i.e., _____ ***(Performance Bank Guarantee Value in figures and words)***

(b) This guarantee shall be valid up to the Expiry Date i.e._____ and

(c) The Bank is liable to pay the Guaranteed Amount or any part thereof under this Bank Guarantee only and only if a demand is made in writing on the Bank at any branch on or before the Claim Expiry Date i.e. _____, else all rights of the beneficiary under this Guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.

Signature and seal of the guarantor _____

Name of Bank -

Address -

Date -

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

PART- II
Bill of Quantities (BOQ)

Bill of Quantities (BOQ)

"The Price Bid BOQ is documented separately and can be downloaded from e-procurement portal http://uktenders.gov.in along with the RFP document. The price bid BOQ in EXCEL FORMAT which is available on http://uktenders.gov.in website should be completely filled and should be uploaded as a part of the bid without which the bid shall be treated as NON-RESPONSIVE." The bidder has to quote the prices ***EXCLUSIVE OF GST***.

NOTE:- BoQ 1 (Schedule-A) is for ESCO Model

And

BoQ 2 (Schedule –B) is for Item rate for the work Necessary Instrumentation for Complete Automation of Various Tube Wells & Booster Pumping Stations under Item Rates Including Operation & Maintenance of 10 years

Value of sum of Schedule-A and Schedule-B should be the least for the Lowest Bidder compared to other bidders.

SECTION III

PROJECT INFORMATION MEMORANDUM

This Section contains the Specification, the Drawings, and supplementary information that describe the Works to be procured. The specifications of the Equipments mentioned in the documents shall govern; and the equipment supplied, installed by the Contractor shall comply with stipulated specifications. The make/ manufacturer of the equipment if mentioned inadvertently in the bidding document shall have no effect.

About the Model:

Energy saved sharing Model (ESCO Project) is a particular form of contracting arrangement used in energy consumption-intensive industries or infrastructure services, like pumping water supply, where the ESCO Contractor is made responsible for all the activities and has to quote prices of Services, considering the Compulsory Saving and over & above this the Expected Saving in the energy bill for all pumping stations & tube wells and the entire Compulsory Saving and part of Expected Saving amount to be shared with authority during "ESCO Operation and maintenance Period". On completion of "ESCO Operation and Maintenance Period" the contractor shall handover the project to the End-User or Owner

SCOPE OF WORK

(A) The overall scope of this project covers the following-

1. Geo-spatial referencing of all the tube wells and overhead tanks under the scope of this project.

2. Supply, installation, commissioning & testing of automation system comprising of the entire network of intelligent RTUs, instruments, cabling etc in order to facilitate logical, sequential and automatic operations of the tube wells.

3. Establishment of SCADA software & hardware at well-equipped Local Control Station (LCS) and at Master Control Stations (MCS).

4. Integration of the tube well sites with MCS & LCS equipped with functional SCADA system suitably located at circle and zonal offices.

Supply and installation of following material is proposed: As per BoQ Schedule-B

1. RTU (Remote Terminal Unit) at each site

2. Touch Screen HMI

3. Upgradation of Electrical panels cum starters

4. Auto phase reversal units

5. Web based SCADA software & hardware at LCS & MCS, SCADA servers

6. 4G GPRS based communications system with all accessories at the sites

7. LCS and MCS, customization & integration of the software

8. Intelligent digital type smart energy meters

9. Isolation transformers for protection of RTUs/Instruments

10. Auto Chlorination system

11. Flow meters

12. Valve actuators for auto operation of valves

13. Pressure Transmitters

14. Ultrasonic Level sensors for OHT's

15. Chlorine Analyzer

16. Depth sensors for measuring ground water level & draw down.

The chlorine needs to be added in PPM with dosing pump as per proportional to the supply water flow rate, the automatic adjustment with flow rate and variation in PPM dozing, as required, will be done by RTU.

5. Testing and calibration of all hardware, sensors, analyzers, monitors, electrical equipment & meters from approved test labs and also third party inspection at the discretion of the Employer and submission of test reports and obtaining approval thereof from the Employer.

6. Installation & commissioning of all the SCADA, automation & instrumentation system listed above

7. Operation & Maintenance of Automation and SCADA system for 10 years. This will include operation & maintenance of all software, hardware, sensors, analyzers, monitors, electrical equipment & wiring, actuators, flow meters, pressure sensors, energy meters, automated chlorinators etc. installed or repaired under this contract.

8. Training and capacity building of Engineers, technicians and other supports staff of DSCL, Uttarakhand Jal Sansthan & any other designated line UJS(s) during the O&M duration as per the directions and to the satisfaction of DSCL to prepare them to take over the Works and to operate & maintain the automation and SCADA system efficiently after expiry of 10 years O&M period.

System Description:-

The system must provide a combination of power, metering, communications, data processing, analytics, generation & communications of reports and alerts etc. The system must consist of individual RTU, each co-located within a Pump House. Each RTU must provide local ICT services (power, metering, communication, and data processing) near its site of installation, and provide bidirectional communications to applications running in the cloud or at Central Server location. The system must also include a Central Management System, which aggregates data about the fleet of RTUs, allows enabling or disabling of onboard interfaces, and a web services interface so that this data can be consumed by external applications.

(B) SCOPE OF WORK FOR O & M OF PUMPING STATIONS, TUBE WELLS & OVER HEAD TANKS (ESCO Work)

2.2 The scope of work for operation and maintenance of Various Pump Houses, Tube Wells & Over Head Tanks as list attached in this RFP is on turn - key job and shall basically comprise of the following but not limited to:

(a) A Tripartite agreement shall be formed between Contractor, DSCL & UJS for the operation and maintenance period of 10 years as DSCL shall be financial agency and UJS shall be for quality monitoring.

(b) Operation and maintenance (including preventive & periodical maintenance) of all plant and machinery installed, switch yards at Various Pump Houses and Tube Wells as stated above.

(c) The contractor shall be responsible for operation and maintenance of all valves, pipelines, internal and external lighting etc. under the project.

(d) The contractor have to carry out routine check up and preventive/ periodical maintenance of all the equipment/ machinery as per schedule in RFP document, all the routine check- up & periodical/preventive maintenance of equipment/ machinery shall be undertaken as per manufacturers manual/ instructions and standard Engineering practice.

2.3 Arrangement of Spares

The contractor shall procure the spares for plant & machinery and to maintain an inventory of spares for likely requirement. Any spares required/ directed by Engineer in-charge shall have to be kept in stock.

2.4 Arrangement of consumables

All consumables items e.g. transformer oil, lubricating oil, diesel, grease, gland packing, fuse wire, HRC fuses, lugs, tube light rods, bulbs, nut bolts etc. shall be arranged by the contractor free of cost. No extra payment on this account shall be made by the UJS.

2.5 Delay in procurement of spares & consumables

Whenever Engineer in-charge feels that O&M agency is delaying the procurement & installation of some particular spare or consumable or repairing and rewinding of pumping machinery & which in his opinion may hamper the proper operation of machinery then he may procure the same & get it installed through some other agency and double the cost incurred would be recovered from the payment due to O&M agency or from his deposit. Such situation would be considered as an unsatisfactory performance of O&M agency and liable to be penalized as per relevant clauses in the tender document under special conditions of contract.

2.6 Damages to UJS Equipment

Normally there should not be any break down. However if break down is found to happen because of damaged/ burning of any part of equipment then same shall have to be replaced/ repaired by the contractor at his cost without any loss of time.

2.7 Replacement of equipment and their parts Any

Any part of equipment is found necessary to be replaced during the preventive maintenance, which in the opinion of contractor may result break down, shall be replaced immediately under intimation in writing to the Engineer in-charge. The cost of such part/ equipment shall be borne by the contractor.

2.8 Period of Running Pump House in a Day

The pump sets in the pumping station are to be operated for 24 hours a day or as per direction of engineer in charge. The contractor shall have to keep his operating staff round the clock in three shifts so that pumping can be done round the clock. Contractor shall also be responsible for safety & security arrangements of all MEI equipments at the pumping stations.

2.9 Up keeping of log Books and Records:

The following records shall be maintained and produced periodically by the contractor for proper monitoring by Engineer in-charge (As per performa to be decided by the UJS)

(a) Daily Log book showing pressure, discharge, voltage, current, temperature of rewinding, temperature of bearing of motors, level in CWR, interruption of power if any, hourly PF (to be recorded on basis of UJS meter) etc.

(b) History sheets of overhauling / maintenance/ replacement electrical/ mechanical equipments, which will be duly verified by the in-charge of pumping station.

The observations in the log book should be recorded on hourly basis, printed log books shall be provided by the contractor at his own cost. The log books shall be securely kept in the pump house under the charge of a responsible person and shall be made available to any officer of the UJS on demand. Log books of previous month shall be deposited to the DSCL/UJS concern every month. All the log books will be deposited to the Engineer in charge after completion of the contract.

2.10 All Furniture required for pump house shall be arranged by the contractor. Minimum one table and four chairs should be made available at each pumping station.

2.11 Inspection/ Observation register will be maintained at each pumping station by the contractor. Instruction recorded in the register shall be complied immediately under the direction of Engineer in charge & compliance shall be recorded in the books.

2.12 Up-keeping, Guarding and gardening of campus

Wherever the scope of gardens are available at pump houses, contractor have to maintain those gardens in a attractive way. One experienced Gardener would be deployed by the contractor who will look after the maintenance and gardening work at all the pump houses and security of campus is also included in the scope of work and O&M of pumping station security guard at all the pump houses shall be made available

round the clock for safety of campus and material lying in the campus by the contractor.

2.13 General Maintenance

The pumping station and its surrounding shall be kept clean and in dry condition, properly ventilated and illuminated. For the purpose of illumination, replacement of fitting/ fixtures shall be borne by the contractor. To keep the pump house in dry condition, the necessary drain pumps already installed at the pumping station shall be operated and maintained properly. The electrical control panels, relays, capacitors, cranes, pumps and motors, walls of pump house, MC room, staircases, railing, battery room etc. shall be kept and maintained dust, oil/ grease free to the satisfaction of the Engineer in-charge.

2.14 Maintenance of Building

Following additional minor works are included in the scope of contract. Minor civil works like painting, color/ white washing, distempering, repair of leaking roof, floor and wall etc. related to the pumping station building, staff quarter, twice during the entire contract period first after completion of one year and second after completion of fifth year.

Minor repair works of boundary wall, other structure of pipe line like fixity block, columns under saddle, air/ sluice / scour valve chamber and other structures situated in campus shall be done by the contractor free of cost as per requirement of the site and direction by Engineer in-charge .Otherwise the same would be carried out by other agency and the additional cost incurred would be recovered from the contractor.

2.15 For the purpose of operating pumps as above, it shall be the responsibility of the contractor to properly control, operate, maintain and safely keep all electrical/ Mechanical/ instrumentation units such as pump, motor, HT/LT panel, battery charger, ICP panels, capacitors etc. in working order.

2.16 Periodically maintenance and overhauling of equipment

Pumps / motors / cranes, exhaust fans, diesel generating set/ dewatering pump and all other equipment fitting etc. shall be operated and periodically overhauled as prescribed in the manuals provided by the manufacturer’s standards, as per direction of Engineer in charge and schedule in RFP document.

2.17 All electrical installations shall also be operated and maintained periodically and checked for its performance as per manual provided by the manufacturer’s standards, as per directions of Engineer in-charge and schedule in RFP document.

2.18 All type of valves and other apparatus shall also be operated and periodically maintained as per manufacturers manual & standards.

2.19 All measuring equipment/devices for measuring pressure discharge/levels etc. shall be operated and periodically maintained as per manufacturers manual.

2.20 Measuring equipment/devices relay etc. Requiring calibration or testing will be get tested and calibrated from manufacturers, authorized/reputed firms for which no extra payment shall be given to the contractor it is deemed to be included in the financial offer of the tender.

2.21 Contractor shall prepare maps of schematic arrangement of Pumping Station and

display in Pump House building and with in a period of 3 months time after award of contract.

COMMUNICATION SYSTEM

3.1 Contractor will have to keep control room 24 hours operational during the contract period.

3.2 In the entire 3 shifts, personnel will have to be provided by contractor at control room and pumping station for keeping all the information & record regarding running of project i.e. Pumping machinery, power failure, total production, level of CWRs as well as any type of break down in system.

3.3 All necessary stationary for record keeping at control room and log books etc. will have to be provided by the contractor free of cost.

4. O&M OF PUMPING MACHINERY

4.1 PUMP

A. OPERATION

Running of pumps through motors as and when required to meet out the required quantity of water.

B. PREVENTIVE MAINTENANCE

B.1 Daily Observation

1. Checking of oil level & temperature of bearings while pump is in operation and maintaining level within the range.
2. Checking of cooling water flow and removal of its leakage.
3. Checking up of alignment of couplings, tightening of nuts bolts of couplings.
4. Air cock checking and rectification if needed.
5. Check for any undue noise or vibration.
6. Reading of pressure, voltage and current is to be entered in log book after each hour.

B.2 Semi Annual Inspection

1. Free movement of the gland of the stuffing box.
2. Cleaning and oiling of the gland bolts.
3. Inspection of the packing and repacking, if necessary.
4. Alignment of the pump and the drive.
5. The condition of the grease should be checked and replaced/replenished to correct quantity. An antifriction bearing should have its housing so packed with grease that the void spaces in the bearing and the housing be 1/3rd to 1/2 filled with greases. A fully packed housing will cause the bearing to overheat and will result in reduced life of the bearing.

B.3 Annual Inspection

1. Cleaning and examination of all bearings for flaws developed, if any.
2. Examination of shaft sleeves for wear or scour.
3. Checking clearances. Clearances at the wearing rings should be within the limits recommended by the manufacturer. Excessive clearances cause a drop in efficiency of the pump. If the wear is one side, it is indicative of misalignment. If the clearance on wear is seen to be 0.2 or 0.25mm more than the original clearance, the wearing ring should be renewed or replaced to get the original clearance.
4. Impeller hubs and vane tips should be checked for any pitting or erosion.
5. End play of the bearing would be checked.
6. All instruments and flow meters if installed, should be recalibrated.
7. Pump should be tested to determine whether proper performance is being obtained.

C. BREAK DOWN MAINTENANCE

1. Opening of the casing, rotor assembly and find out the reasons for break down.
2. All modification, rectification, replacement shall be done except impeller. The impeller shall be referred to original manufacturer and get it repaired or replaced.

5.2 MOTORS

A. OPERATION

1. Running of motors as & when required as per direction of Engineer in Charge.

B. PREVENTIVE MAINTENANCE

As preventive maintenance, it is instructed to follow a schedule for the maintenance to the equipment. The schedule covers recommendations for checks and remedial actions, to be observed at different periodicities such as daily, monthly, quarterly, semi annually, annually and bi annually.

B. 1 Daily Observation

1. Checking of vibrations, bed plates and foundation bolts, tightening of bolts
2. Checking of bearing temperature, winding temperature indicatorsmtransmitters connections etc.

B. 2 Monthly Observation

1. Nothing special other than the daily checks.

B. 3 Quarterly Observation

1. Blow away dust and clean any splashing of oil or grease.
2. Check wear of slip ring and bushed, smoothen contact faces or replace, if necessary. Check spring tension. Check bush setting for proper contract on the slip ring if applicable in this case.
3. Check cable connections and terminals and insulation of the cable near the lugs,

clean all contacts, if insulation is damaged by overheating investigate and rectify. All contacts should be fully tight.

B.4 Semi Annual Observation

1. Check condition of oil or grease and replace if necessary. While greasing, avoid excessive greasing.
2. Test insulation by meger.
3. Anti condensation heaters are working or not and if no, do rectification.
4. Cleaning of air flow duct and dust ring etc.

B. 5 Annual Observation

1. Examine bearings for flaws, clean and replace if necessary. Check condition of oil or grease and replace if necessary. While greasing, avoid excessive greasing.
2. Check end play of bearings and reset by lock nut, wherever provided.

C. BREAK DOWN MAINTENANCE

1. Opening of covers and find out reasons of break down.
2. Changing of bearing only.

6 L.T. PANEL

A. OPERATION

Making of circuit breakers ON/OFF of all the motors, fans, lights, and other fittings equipments as and when required.

B. PREVENTIVE MAINTENANCE

B.1 Daily Observation

1. Check the phase indicating lamps.
2. Note reading of voltage, current, frequency etc.
3. Note energy meter readings.
4. Checking of all ACB/OCB/MCCB and its functioning, mountings etc.

B.2 Monthly Observation

1. Examine contacts of relay and circuit breaker. Clean, if necessary.
2. Check setting of over current relay, No volt coil and tripping mechanism and oil in dashpot relay.

B.3 Quarterly Observation

1. Check fixed and moving contacts o the circuit breakers/switches. Check and smoothen contacts with fine glass paper or file.
2. Check condition and quantity of oil/liquid in circuit breaker, auto transformer starter and rotor controller.

B.4 Semi Annual Observation

1. Check for corrosion and take remedial measures. Check by megger the insulation resistance of switches, bus bar, starter-terminals, autotransformer, etc for phase to - earth and phase - to - phase, resistance.

B.5 Annual Observation

1. All indicating meters should be calibrated.
2. Checking of control voltage at panels, and rectification.
3. Checking of all chutes its cleaning, greasing and replacement if needed.
4. Checking of operation mechanism for closing tripping etc.
5. Checking of dust, moisture, discoloration in chassis and checking of electrical connection.

C. BREAK DOWN MAINTENANCE

1. Do operating mechanism replacement if found defective.
2. Replace push buttons, switches, meters etc. if found defective

8 DISCONNECTING SWITCHES

A. OPERATION

It is operated by hand level as and when required OR ON/OFF POSITION.

B. PREVENTIVE MAINTENANCE

1. Checking for nuts, bolts, conductor connections on insulators etc. tightening if found loose/and do replacement if found broken.
2. Checking of contacts its greasing and replacement if found burnt out or damaged.
3. Lever mechanism springs, locking etc. are to be checked.
4. Check the earth switch for satisfactory working.

C. BREAK DOWN MAINTENANCE

1. Replacement of the part/complete items as required/needed.
2. Check and replace the earth switches completely.

NEVER DO WHEN SOME REPAIR IS GOING ON THE OUTGOING CIRCUITS.

9 SLUICE VALVE /BUTTER FLY VALVES

A. OPERATION

Making the valve open and close as and when necessarily.

B. PREVENTIVE MAINTENANCE

1. Checking for full travel/rotation of the gate of the valve
2. Checking of the Lubrication and removal of leakage or other defect if found.
3. Placing of the gland in the stuffing box and lighting of nut & bolts.

10 ZERO VELOCITY VALVE

A. PREVENTIVE MAINTENANCE

1. Checking of noise and vibration hydraulic pressure.
2. Checking of bye pass valve operation.
3. Checking hydraulic control of gate.
4. Calibration of spring.

B. BREAK DOWN MAINTENANCE

Replacement of any broken part if found with good one or repair one.

11 EXPANSION JOINT

A. PREVENTIVE MAINTENANCE

1. Removal of leakage of zero velocity valves.
2. Tightening of nut and bolts.

B. BREAK DOWN MAINTENANCE

Removal of Leakage by replacing gland packing including replacement

of damaged nut bolt.

12 NON RETURN VALVES

A. OPERATION

Checking of the noise, vibration etc. when the valve gates open close during the pump operation.

B. BREAK DOWN MAINTENANCE

1. Replacement of any broken parts if found with good one or repaired one.
2. Replacement of nut and bolts if found defective/broken etc.

13 SUCTION/ DELIVERY PIPING AND DISMANTLING JOINTS

A. OPERATION

1. Checking of line pressure, suction pressure, delivery pressure and valve position.

2. Doing ON/OFF position of dismantling joints while replacement of any requirement in the assembly line if needed.

3. Removal of any type of leakage in suction/ delivery pipeline.

B. PREVENTIVE MAINTENANCE

1. Checking of tightening of nut bolts etc.

C. BREAK DOWN MAINTENANCE

1. Replacement of nuts, bolts, pressure gauges, associated pipeline installations on assembling if found defective.

2. Removal of leakages in the pump house.

14 EARTHING AND LIGHTENING PROTECTION UNIT

A. PREVENTIVE MAINTENANCE

1. Checking of terminals, joints of conductor strips and connection with pits.

2. Checking of unit series resistance, shunt capacitance, leakage current etc. as and when required.

B. BREAK DOWN MAINTENANCE

1. Replacement of parts/items, jointing of conductor strips, terminals if found defective.

15 CABLES AND CABLES TRAYS

A. OPERATION

1. Checking of heating of cables by digital thermometer.

B. PREVENTIVE MAINTENANCE

1. Cleaning of cables and cables trays from dust, dirt, oil, grease etc.

2. Entries in the pump house should be restricted from mouse and other small insect/animals/birds etc.

C. BREAK DOWN MAINTENANCE

Replacement of damaged one with good one if found.

NEVER USE SHARP IRON BLADES ON CABLES

16 LIGHTING/ILLUMINATION SYSTEM

A. OPERATION

Making ON/OFF through switches the necessary illumination required in the pump house switch yard and around campus.

B. PREVENTIVE MAINTENANCE

Checking of the terminals, electrical connection, mechanical fittings/fixtures in position for its satisfactorily.

C. BREAK DOWN MAINTENANCE

Replacement of parts, items etc, if found defective/damaged/burnt out with good one of reputed equivalent make.

NEVER ON THE SWITCHES WHEN PARTICULAR FEEDER LINE IS UNDER REPAIR.

17 SCHEDULE OF PREVENTIVE MAINTENANCE

NOTE:

1. All the routine checkup, Preventive/periodicals maintenance of equipment's shall be under taken as per manufacturer manuals/instruction and standard Engineering practice.
2. General cleanness, removal of dust, dir, grease, oil etc, from the equipment's and pump houses shall have to be carried out daily.
3. Frequency of works to be undertaken is marked by asterix in appropriate column.

SCHEDULE OF MAINTENANCE

	Daily	Weekly	Fort month	Three months	Six months	Yearly
PUMP						
Installation checkup			☐			
Bearing Temp.	☐					
Cooling and lubricating system.	☐					
Water flow			☐			
Vibration	☐					
Glands		☐				
Bearing oiling and Greasing		☐		☐		
Coupling bush/bolts			☐			
Checking of wear and tear of line shift sleeve.					☐	
MOTOR						
Installation				☐		
Earthing					☐	
Terminal box with cable			☐			
Vibrations		☐				
Bearing Temp.	☐					
Bearing lubrication/greasing			☐			
Cooling system				☐		
Anti Condensation Heater				☐		
I.R. Value					☐	
L.T. PANEL						
ACB operating mechanism	☐					
Are chutes					☐	
	Daily	Weekly	Fort	Three	Six	Yearly

			month	months	months	
Contacts	☐					
Check all indicating instruments, Lamps, Fuses,	☐					
AUX TRANSFORMER						
General inspection	☐					
Oil level in conservative	☐					
Oil level in transformer	☐					
Clamping Nuts & bolts on tap changer			☐			
Leakage of Oil	☐					
Explosion vent Diaphragm						
Silica Gel Breather					☐	
Rollers						
External connections/earthing			☐			
Die electric strength of oil					☐	
Insulation value of winding					☐	
Sludge and acidity in oil.					☐	
Dehydration of oil					☐	
Gasket joint					☐	
Bushing	☐					
Oil Cooler fins			☐			
33 KV VCB						
Main conductor & Insulators		☐				
Operating mechanism					☐	
Lever,counter reading				☐		
Opening and closing trips						
Auxiliary switches			☐			
Interrupter contact wear					☐	

	Daily	Weekly	Fort Night/ month		Three months	Six months	Yearly
Megger test & overall inception						☐	
Current transformer						☐	
MAIN TRANSFORMER							

Oil leakage & level/indicator							
Clamping nuts & bolts on tap changer							
Dia-electric strength of oil						☐	
Sillica- Gel breather						☐	
Buchhola Relay, Alarm & their circuits					☐		
Oil cooler fins					☐		
Plosion vent					☐		
Amp. Indicator	☐						
Busing	☐						
Insulation Resistance						☐	
External connection/earthing						☐	
Roller				☐			
Winding & oil Temp.	☐						
Over all inspection							☐
H.O.T. CRANE							
Ensure the operation of crane		☐					
Walkway (greasing, oil, leak, loosening of bolts)		☐					
Lubrication - Oil/grease			☐				
Hoist wire rope					☐		
Coupling, shaft, plumber blocks,				☐			
Bridge and Trolley wheels.						☐	
Rope sheaves.						☐	
SLUICE VALVES							
Full travel of gate				☐			
Stuffing box packing				☐			
Tightening of bolts				☐			
MULTI DOOR CHECK VALVES NON RETURN VALVE							
Tightening of bolts	☐						
By pass valve Operation		☐					

	Daily	Weekly	Fort Night/ month		Three months	Six months	Yearly
Vibration/Noise	☐						
Hydraulic control				☐			
Valve cam setting							
DEWATERING/DOISILTING PUMP							
Earthing of pump						☐	
Transformer oil in motor				☐			
Noise				☐			
Starter, Float Switches				☐			
Cable				☐			
Wear plate				☐			
Impeller sleeve as required.				☐			
Checking of electrodes				☐			
LEVEL CONTROLLER							
Main supply connection Cable and ducts	☐						
Inter connection of controller of probe.				☐			
Nut & Bolts of probe				☐			
Calibration					☐		

18 (i) Abstract of Tube Wells

Sr No	Location Of Source	Present Condition of Existing Pump					Average Running Hours	Delivery Pipe Material	Delivery Line Size (mm)	Actual annual expenditure of Electric (last 12 Months)	
		Make Motor	Make Pump	HP	Rated Discharge (M^3/Hr)	Head (Mtr)				Units (KWH)	Amount in Rs
SOUTH DIVISION TUBEWELL DETAIL											
1	Niranjanpur 1	KSB	KSB	85	2500	120	22	MSERW	150	584800	3055140
2	Niranjanpur 2	KSB	KSB	85	2500	120	22	MSERW	200	814320	4599188
3	Niranjanpur 3	KSB	KSB	85	2500	120	22	MSERW	200	393255	2027037
4	Niranjanpur 4	KSB	KSB	85	2500	120	22	MSERW	200	673320	3789303
5	Matawala Bagh	KSB	KSB	85	2500	120	22	MSERW	150	205800	1142532
6	Hindu national School	KSB	KSB	85	2000	120	22	MSERW	150	78982	382618
7	Tahsil Parisar	KSB	KSB	85	2000	120	22	MSERW	150	382757	1966891
8	Khurbura City Board School	KSB	KSB	75	1800	110	22	MSERW	200	680885	3180728
9	Jhanda Mohalla Indresh Nagar	KSB	KSB	75	1500	120	18	MSERW	150	483660	2461056
10	Khurbura Guru Ram rai School	KSB	KSB	75	2000	120	22	MSERW	150	218760	1143923

11	MDDA Ghandi Gram	KSB	KSB	62	1500	120	18	MSERW	150	64308	299041
12	Tagore Villa Ansari Marg	KSB	KSB	62	1500	120	22	MSERW	150	556080	2788520
13	Patel nagar	KSB	KSB	62	2000	120	22	MSERW	150	125330	648473
14	Pathri Bagh	KSB	KSB	62	1500	120	22	MSERW	150	523760	2663136
15	Dehrakhas	KSB	KSB	52	2000	50	8	MSERW	150	397633	1873005
16	Ghandi Gram New	KSB	KSB	85	2000	120	16	MSERW	150	471900	2419870
17	Chander nagar	KSB	KSB	100	2500	120	18	MSERW	200	729517	3671041
18	Nehru Colony 1	KSB	KSB	75	2400	65	22	MSERW	200	918133	3621687
19	Nehru Colony 2 Dharampur Office	KSB	KSB	75	2000	65	16	MSERW	150	611640	3089187
20	Nehru Colony 3	KSB	KSB	62	1500	120	16	MSERW	150	256980	1317889
21	Nehru Colony 4	KSB	KSB	85	2000	120	16	MSERW	200	840169	3896134
22	Nehru Colony 5	KSB	KSB	100	2500	120	22	MSERW	200	391050	1986857
23	I Block Park	KSB	KSB	85	2500	120	24	MSERW	200	609210	3076319
24	I Block River Side	KSB	KSB	85	2500	120	24	MSERW	200	256980	1317889
25	Sanjay Colony	KSB	KSB	85	2500	120	24	MSERW	200	497280	2511494
26	NagarPalika	KSB	KSB	100	2500	120	22	MSERW	150	78536.25	320739
27	Bannu School	KSB	KSB	85	2000	120	22	MSERW	150	766797	3848403
28	Carzon Road	KSB	KSB	85	2000	120	22	MSERW	150	606900	3090021
29	Raffel Home	KSB	KSB	75	1800	120	18	MSERW	150	616760	3086641
30	Inder Road	KSB	KSB	62	1500	120	22	MSERW	150	471180	2364740
31	Mahila ITI	KSB	KSB	62	1500	120	22	MSERW	150	469388	2146346
32	Sanjay Colony Inder Road	KSB	KSB	40	1000	120	22	MSERW	150	632000	3189144
33	Old Jail Parisar	KSB	KSB	85	1500	120	22	MSERW	150	964032.5	3382840
34	Nehru colony H Block	KSB	KSB	85	2000	120	16	MSERW	150	607110	3065177
35	Tyagi Road MDDA park	KSB	KSB	85	2000	120	8	MSERW	150	219960	1152464
36	Ghandi Park	KSB	KSB	85	2500	120	16	MSERW	150	416008	2112767
37	Badrinath Colony	KSB	KSB	100	2500	120	14	MSERW	200	18760	141326
38	Tibbati Market	KSB	KSB	85	2000	120	16	MSERW	150	78640	441514
39	Tagore Villa	KSB	KSB	85	2000	120	24	MSERW	150	556080	2788520
40	Survey Chowk	KSB	KSB	75	1500	110	16	MSERW	150	1250810	5336853
41	Karanpur	KSB	KSB	75	1500	140	20	MSERW	150	580520	2969836
42	DAV Collage	KSB	KSB	75	1200	170	16	MSERW	150	500360	2560010
43	Dobhalwala	KSB	KSB	40	800	140	8	MSERW	125	108033	466946
44	Chukhuwala Back side of GPO	KSB	KSB	62	1000	170	10	MSERW	150	306800	1556456
45	Nehru colony I Block OHT Parisar	KSB	KSB	85	2000	120	16	MSERW	150	609210	3076319
46	Tyagi Road Madrasi Colony	KSB	KSB	85	2000	120	8	MSERW	150	219960	1152464
47	Kusum Vihar	KSB	KSB	62	1000	140	8	MSERW	100	159080	832679

48	Dehrakhas near surkunda Mandir	KSB	KSB	85	2000	120	8	MSERW	150	NA as per Bill	69903
49	Pritam Road	KSB	KSB	75	2000	120	16	MSERW	150	328252	1581545
50	Cement Road	KSB	KSB	75	1500	145	18	MSERW	150	554141	2625765
51	Dharampur Dispensary	KSB	KSB	100	2000	120	16	MSERW	150	508896	2408925
52	Matawala Bagh 2	KSB	KSB	85	2000	120	18	MSERW	150	57340	315647
53	Sanjay Colony Mohini Road	KSB	KSB	75	1800	120	16	MSERW	150	367245	1843197
54	Kanak	KSB	KSB	85	1800	130	10	MSERW	150	6983521	32261114
55	Municipal Road	KSB	KSB	85	1500	160	16	MSERW	150	New tw bill not rcd	
56	Rajpur Road GGIC	KSB	KSB	40	800	160	14	MSERW	100	36630	175528
57	Pared Ground	KSB	KSB	60	1500	120	14	MSERW	150	455836	2317532
58	Race Cource	KSB	KSB	75	1500	190	8	MSERW	150	130162	658314
59	HathiBarkhala	KSB	KSB	100	1000	120	8	MSERW	150	New tw bill not rcd	
60	Madhoram Quarter	KSB	KSB	75	1500	150	6	MSERW	150	New tw bill not rcd	
61	Vijay Colony Old	KSB	KSB	20	200	120	24	MSERW	150	281140	1425661
62	Vijay Colony New	KSB	KSB	20	300	120	10	MSERW	80	122208	646704
63	Vijay Colony Kora	KSB	KSB	5	180	120	24	MSERW	40		
64	Indira Colony New Shikhar Sandesh	KSB	KSB	20	400	120	12	MSERW	80	166550	838388
65	Neelkanth Vihar	KSB	KSB	25	300	120	14	MSERW	65	62401	325141
66	HathiBarkhala	KSB	KSB	20	200	120	8	MSERW	50	63376	326354
67	Adarsh Vihar	KSB	KSB	5	100	120	4	MSERW	32	TW Not Functional	
68	Bandro wali Gali	KSB	KSB	75	500	110	8	MSERW	80	62972	331019
69	Ritha Mandi Muslim Colony	KSB	KSB	25	800	120	10	MSERW	100	362765	2092140
70	Single mandi	KSB	KSB	25	800	120	10	MSERW	100	50182	271915
71	Laxman Chowk (Rekha Shrivastav	KSB	KSB	25	400	120	8	MSERW	80	78982	382618
72	Vidhya Vihar Phase 1	KSB	KSB	25	850	120	8	MSERW	100	77016	404754
73	Judg Colony	KSB	KSB	25	800	120	8	MSERW	80	179307	828314
74	Modal Colony	KSB	KSB	25	850	120	8	MSERW	80	189422	769647
75	Rameshwar mohalla	KSB	KSB	25	700	70	8	MSERW	80	146528	695594
76	Gharwal Sabha	KSB	KSB	25	400	120	8	MSERW	80	83524	423487
77	Salawala	KSB	KSB	15	400	120	8	MSERW	80	155980	682569
78	Green Velly	KSB	KSB	25	500	140	8	MSERW	80	48676	256906
79	Aahir mandhi	KSB	KSB	25	300	120	8	MSERW	80	56648	292613
80	RaceCource	KSB	KSB	15	500	120	8	MSERW	80	126011	637987
81	Chander Singh Gharwali Margh	KSB	KSB	20	500	120	8	MSERW	80	81663	420044
82	Chukhuwala near by shikandi Pardhan residence	KSB	KSB	25	600	120	6	MSERW	100	62680	335780
83	Indira Colony	KSB	KSB	40	400	140	12	MSERW	100	257649	1054525

84	Sharma tailor River Side	KSB	KSB	25	300	130	8	MSERW	80	37440	211506
85	Narayan Vihar	KSB	KSB	40	1000	120	8	MSERW	100	35560	203343
86	Prakash Vihar	KSB	KSB	60	1500	120	4	MSERW	150	NEW T.W BILL NOT RECEIVED YET	
87	Brijlok Colony	KSB	KSB	62	1000	190	4	MSERW	150		
NORTH DIVISION TUBEWELL DETAIL											
88	Kolagarh OHT	KSB	KSB	40	1000	120	22	MSERW	150	231510	1194915
89	Kolagarh Chungi	KSB	KSB	75	1800	120	22	MSERW	150	694869	2953447
90	Nach Ghar Rajender nagar gali No 2	KSB	KSB	52	2200	120	22	MSERW	150	382160	2172873
91	Rajender nagar gali No 8	KSB	KSB	40	1800	120	22	MSERW	150	498384	2219677
92	Loharwala	KSB	KSB	40	800	120	22	MSERW	100	205680	1101925
93	Vijay park 1 (A.E Office)	KSB	KSB	62	1400	120	22	MSERW	150	147729	855901
94	Shrirampuram	KSB	KSB	100	2500	120	22	MSERW	150	802840	4150693
95	Nimbuwala Kolagarh	KSB	KSB	40	800	120	22	MSERW	100	119120	595109
96	Sirmor	KSB	KSB	17.5	800	120	22	MSERW	100	72760	396651
97	Sitaram mandir	KSB	KSB	62	1000	120	22	MSERW	125	267580	1392318
98	Vijay Park2	KSB	KSB	62	1500	120	22	MSERW	150	496609	2584623
99	Rajender nagar gali No 3	KSB	KSB	85	2000	120	22	MSERW	150	684840	3534621
100	Rajender nagar gali No 4	KSB	KSB	40	700	150	22	MSERW	100	332020	1690264
101	Yamuna Colony 1	KSB	KSB	40	700	120	22	MSERW	100	64980	376798
102	Yamuna Colony 2	KSB	KSB	40	700	120	22	MSERW	100	50400	276642
103	Ankit Vihar PremPur Maffi	KSB	KSB	40	1000	120	22	MSERW	100	121500	637661
104	Bajawala	KSB	KSB	40	1000	120	22	MSERW	100	128677	568165
105	Rajender nagar gali No 8 (ADB)	KSB	KSB	62	800	160	22	MSERW	100	502824	2977673
106	Kolagarh (ADB)	KSB	KSB	62	900	160	22	MSERW	100	308858	1562318
107	Kishan nagar	KSB	KSB	25	600	120	8	MSERW	100	180556	918782
108	Vanastali	KSB	KSB	17.50	700	120	8	MSERW	80	67014	354514
109	Chuna Bhatta Kolagarh	KSB	KSB	25	600	120	8	MSERW	80	254536	1113471
110	Shanti Vihar	KSB	KSB	17.00	400	120	8	MSERW	80	104984	542419
111	Govind garh	KSB	KSB	25	600	120	8	MSERW	100	277647	1398154
112	Ambedkar marg Primary School	KSB	KSB	25	500	110	22	MSERW	80	67508	358374
113	Hari Vihar (ADB)	KSB	KSB	85	1800	140	22	MSERW	150	581286	2741554
114	Masanda Wala	KSB	KSB	25	600	120	8	MSERW	100	101578	487280
115	Mitrlok Colony	KSB	KSB	25	700	120	8	MSERW	100	141260	613921
116	Idh Gha	KSB	KSB	25	600	110	8	MSERW	80	113672	573057
117	Akashdeep	KSB	KSB	25	600	110	8	MSERW	100	119598	532972
118	Malroad	KSB	KSB	20	500	110	8	MSERW	80	84444	375026
119	Durga Vihar	KSB	KSB	20	500	120	8	MSERW	80	114318	545437
120	GMS Road	KSB	KSB	20	500	110	8	MSERW	80	111211	575192

121	RajNikung	KSB	KSB	25	250	110	8	MSERW	80	32038	172824
122	MDDA Dalanwala	KSB	KSB	75	1800	120	22	MSERW	150	478600	2443794
123	Adhoiwala Shivlok	KSB	KSB	25	400	120	22	MSERW	125	219240	1147818
124	Brahamawala Khala 1	KSB	KSB	85	1500	175	22	MSERW	125	847470	4223473
125	vani Vihar	KSB	KSB	85	2200	120	22	MSERW	150	671793	6118547
126	Nanoor Khera	KSB	KSB	85	1500	140	22	MSERW	150	1033520	5183459
127	Kanan Kunj	KSB	KSB	62	1500	140	22	MSERW	150	393660	2012381
128	Badrish Colony	KSB	KSB	62	1200	140	22	MSERW	150	456323	2293323
129	Ekta Vihar	KSB	KSB	85	1500	175	22	MSERW	150	517840	2695380
130	Brahamawala Khala 2 (SGRR School)	KSB	KSB	85	1500	175	22	MSERW	150	1210051	6218582
131	Chuna Bhatta OHT 1	KSB	KSB	62	1500	120	22	MSERW	150	541930	2536416
132	Shastradhara Crossing	KSB	KSB	62	1500	120	22	MSERW	150	278080	1205772
133	Adhoiwala 2 Shakti Vihar	KSB	KSB	75	1500	150	22	MSERW	125	590003	3005208
134	Adhoiwala Chatrawas	KSB	KSB	75	1500	140	22	MSERW	150	656060	3338333
135	Rajeev Nagar danda	KSB	KSB	62	1500	120	22	MSERW	150	BILL NOT RECIVED	
136	Mangluwala	KSB	KSB	25	500	120	22	MSERW	100	220	49598
137	Dashmesh Vihar	KSB	KSB	30	1000	120	22	MSERW	150	277190	1426333
138	Aman Vihar (jal Nigam)	KSB	KSB	52	1000	115	22	MSERW	150	BILL NOT RECIVED	
139	Saraswati Vihar	KSB	KSB	25	600	120	8	MSERW	80	90914	471758
140	Chidowali	KSB	KSB	25	300	120	8	MSERW	80	151610	762217
141	Mandakni Vihar	KSB	KSB	7.5	80	120	8	MSERW	40	34073	177952
142	Azad nagar	KSB	KSB	17.5	400	120	8	MSERW	65	87167	453258
143	D.L Road	KSB	KSB	85	1500	140	22	MSERW	125	714930	3632841
144	Johri gaun	KSB	KSB	20	500	110	8	MSERW	80	131901	678676
145	Himayalan garden	KSB	KSB	25	600	120	8	MSERW	100	46095	241266
146	Sinoola	KSB	KSB	20	300	110	8	MSERW	80	43552	235527
147	Baghratipuram	KSB	KSB	25	500	120	12	MSERW	80	15860	84657
148	Vivek Vihar 2	KSB	KSB	25	400	120	12	MSERW	80	203639	792965
149	Chido Nagar Nigam	KSB	KSB	20	300	140	8	MSERW	80	103732	534113
150	Bhima Vihar	KSB	KSB	25	300	150	8	MSERW	100	708736	3604434.61
151	Kalashpuri	KSB	KSB	20	700	110	8	MSERW	80	119729	580685.65
152	Gangotri Vihar (Jal Nigam)	KSB	KSB	60	1000	170	14	MSERW	150	NEW T.W BILL NOT RECEIVED YET	
153	Sunderwala Aamwala Trala-1	KSB	KSB	17.5	500	120	10	MSERW	100		
154	Sunderwala Aamwala Trala-2	KSB	KSB	15	500	120	10	MSERW	100		
155	Sunderwala	KSB	KSB	85	1100	90	12	MSERW	150		
PITHUWALA DIVISION TUBEWELL DETAIL											
156	vasant vihar 1	KSB	KSB	85	1500	110	22	MSERW	250	446664	2531112

157	vasant vihar 2	KSB	KSB	52	1500	105	22	MSERW	150	104391	615912
158	vasant vihar Phase 1 Mini	KSB	KSB	25	500	80	8	MSERW	80	87720	500520
159	maharani Bagh	KSB	KSB	85	2000	120	22	MSERW	250	360461	2081230
160	Panditwadi	KSB	KSB	85	1800	120	22	MSERW	200	174240	914904
161	Indranagar 1	KSB	KSB	52	1400	85	22	MSERW	250	342220	2144580
162	Indranagar 2	KSB	KSB	25	400	85	16	MSERW	200	343920	1984620
163	Indranagar 3	KSB	KSB	62	1600	120	22	MSERW	200	499896	2819208
164	Indranagar 4	KSB	KSB	62	1600	120	22	MSERW	250	195320	1114476
165	G.M.S. Road kanwali	KSB	KSB	75	1800	75	22	MSERW	250	466752	2663232
166	Ashok Park Niranjanpur	KSB	KSB	40	1400	65	20	MSERW	150	324480	1621452
167	Shakti Vihar Mazra	KSB	KSB	40	1400	65	16	MSERW	250	317760	1691292
168	Engineer Enclave	KSB	KSB	52	1000	85	22	MSERW	100	400800	2372232
169	Indrapuram	KSB	KSB	75	1800	85	22	MSERW	250	441864	2521224
170	Ashirwad Enclave Mini	KSB	KSB	17.5	400	100	10	MSERW	80	96370	549864
171	GreenPark Mini Ballupur	KSB	KSB	17.5	350	65	10	MSERW	80	158233	902856
172	Vyomprastha	KSB	KSB	20	500	85	8	MSERW	100	66300	378300
173	Hill View Colony	KSB	KSB	85	1800	120	22	MSERW	200	153275	874571
174	Kanwali Gaon	KSB	KSB	62	1500	120	22	MSERW	200	435897	2487180
175	Milan vihar	KSB	KSB	75	1800	120	22	MSERW	200	454140	2582328
176	Vasant Vihar Phase 2	KSB	KSB	62	1600	120	16	MSERW	150	190440	976884
177	Lower Mazra 1	KSB	KSB	41	1500	70	22	MSERW	450	471648	2811168
178	Lower Mazra 2	KSB	KSB	75	2000	70	20	MSERW	250	206880	1371192
179	Niranjanpur ITI	KSB	KSB	75	2000	100	20	MSERW	250	432072	2465352
180	Deepnagar 1	KSB	KSB	62	1500	120	20	MSERW	450	455717	2821104
181	Deepnagar 2	KSB	KSB	52	1500	100	20	MSERW	200	286920	1885104
182	Vidhya Vihar	KSB	KSB	75	350	75	12	MSERW	80		
183	Shanti Vihar Mini	KSB	KSB	90	600	90	10	MSERW	80	118800	758784
184	Kargi Bhatta	KSB	KSB	100	500	100	16	MSERW	200	NA	187704
185	Lower Kargi	KSB	KSB	75	600	75	12	MSERW	150	91560	513324
186	Ajabpur Mothrowala (Bangali Kothi)	KSB	KSB	41	1500	60	20	MSERW	400	360774	2058528
187	THDC Ajabpur	KSB	KSB	62	1500	85	18	MSERW	125	133440	813696
188	SubhashNagar	KSB	KSB	70	1500	70	22	MSERW	200	384948	2196468
RAIPUR DIVISION TUBEWELL DETAIL											
189	Saraswati Vihar (Office campus	KSB	KSB	62	1600	110	12	MSERW	150	368624	1793832.32
190	Mata Mandir (Ajabpur)	KSB	KSB	52	1400		18	MSERW	150	136650	637010
191	Ganesh Vihar	KSB	KSB	52	1600	100	10	MSERW	150	235440	1211941.67
192	saraswati Vihar (D Block)	KSB	KSB	60	1600	100	10	MSERW	150	300300	1572117.11
193	Saraswati Vihar E Block	KSB	KSB	25	500	100	12	MSERW	80	170038	880990.7
194	Shiv Mandir	KSB	KSB	85	1600	120	18	MSERW	150	595892	2688881.

	(Ajabpur)										9
195	Ajabpur (haridwar Bypass road) old/ (Vishnu lok colony	KSB	KSB	62	1500	100	18	MSERW	150	419214	2005820.97
196	haridwar road say phele 'Shastrinagar	KSB	KSB	85	2200	100	20	MSERW	150	569686	2868713.07
197	Vidhan Sabha campus	KSB	KSB	25	1000	100	4	MSERW	100	402759	2072816.48
198	Friends Enclave Gorakhpur	KSB	KSB	40	1000	110	10	MSERW	150	287661	1385721.64
199	Kedarpuram - 1	KSB	KSB	40	1400	100	18	MSERW	125	446035	2103347.21
200	Kedarpruam - 2	KSB	KSB	52	1800	100	18	MSERW	150	11120	75262.94
201	Rajiv nagar	KSB	KSB	85	1800	120	18	MSERW	150	272020	1437041.8
202	Divya Vihar (Upper Rajiv Nagar)	KSB	KSB	25	400	90	12	MSERW	80	48589	252973.12
203	Jyoti Vihar	KSB	KSB	25	500	100	12	MSERW	80	435157	2385114.23
204	Rajiv nagar danda	KSB	KSB	52	2000	110	18	MSERW	150	419700	2181691.8
205	Dyanasour	KSB	KSB	52	1500	110	10	MSERW	150	106676	567660.34
206	Vidhan Sabha	KSB	KSB	25	1000	100	4	MSERW	100	143470	306563.43
										67675978	343457562.2
Note:	1.Dehrakhas Near Surkunda Mandir tubewell Sl No 48 total running for 3 months only and running hours Jun-135 Hours, feb 112 Hours, March 150 Hours Total 397 Hours hence electricity consumption is low.										

18 (ii). Abstract of Pump Houses

OFFICE OF THE EXECUTIVE ENGINEER (SOUTH) UTTARAKHAND JAL SANSTHAN, DEHRADUN											
S.No	Name of WSS	Name of MPH	Make of Pumping Set	Rated Pump Data			Working Hour	Delivery Pipe Material	Delivery Line Size (mm)	Actual annual expenditure of Electric (last 12 Months)	
				Head	Discharge	Motor Rating(HP)				Units (KWH)	Amount in Rs
1	Bijapur Boosting Station Dehradun	Pump No1	Mather & Platt	52	4200	75	12	MSERW	200	57300	3234818
2		Pump No 2	Mather & Platt				12	MSERW	200		
3		Pump No 3	Mather & Platt				12	MSERW	200		
4		Pump No 4	Mather & Platt				12	MSERW	200		
5	Survey Chowk Boosting Station Dehradun	Pump No 1	Mather & Platt	52	4500	100	24	MSERW	150	S. No 40 tubewell Common meter installed, power Consumption Included tubewell .	
6		Pump No 2	Mather & Platt	52	2500	50	24	MSERW	150		
7		Pump No 3	Mather & Platt	52	2500	50	24	MSERW	150		
8	Dharampur Boosting Station Dehradun	Pump No-1	Mather & Platt	65	6000	150	12	MSERW	200	S. No 19 tubewell Common meter installed, power Consumption Included tubewell .	
9		Pump No-2	Mather & Platt	65	6000	150	12	MSERW	200		
10		Pump No-3	Mather & Platt	52	4500	100	12	MSERW	200		
11		Pump No-4	Mather & Platt	52	4500	125	12	MSERW	200		
12	Water Works Boosting Station Dehradun	Pump No-1	Mather & Platt	35	2500	30	12	MSERW	150	Common meter installed; power Consumption Included tubewell	
13		Pump No-1	Mather & Platt	35	2500	30	12	MSERW	150	253160	1294224
14		Pump No-2	Mather & Platt	52	4500	100	12	MSERW	150	318420	1605706
15		Pump No-2	Mather & Platt	50	4500	100	12	MSERW	150	1266.3	26989
16		Pump No-3	Mather & Platt	35	2500	50	12	MSERW	100	67913	346868
17		Pump No-3	Mather & Platt	35	2500	50	12	MSERW	150	2557.69	24545
18		Pump No-3	Mather & Platt	35	2500	50	12	MSERW	150	249360	1271335
19		Pump No-3	Mather & Platt	52	2500	60	12	MSERW	200	Detail included in above	
20		Pump No-4	Mather & Platt	42	5000	100	12	MSERW	250		
21		Pump No-4	Mather & Platt	42	5000	100	12	MSERW	250		
22		Pump No-5	Mather & Platt	35	5000	60	12	MSERW	150		
23		Pump No-5	Mather & Platt	35	5000	60	12	MSERW	150		
24		Pump No-5	Mather & Platt	140	400	30	12	MSERW	100		

25		Pump No-5	Mather & Platt	100	400	7.5	12	MSERW	100		
26	Kasherwala Boosting Station Dehradun	Pump No-1	Mather & Platt	52	4500	100	12	MSERW	200	223656	1387746.20
27		Pump No-1	Mather & Platt	52	4500	100	12	MSERW	200		
28	Vijay Colony Boosting Station Dehradun	Pump No-1	Mather & Platt	120	400	25	12	MSERW	80	Common meter installed, power Consumption Included tubewell S. No 61 Tubewell	
29		Pump No-2	Mather & Platt	120	400	25	12	MSERW	80		
30		Pump No-3	Mather & Platt	120	400	25	12	MSERW	80		
31		Pump No-4	Mather & Platt	120	400	25	12	MSERW	80		
NORTH DIVISION											
1	NalaPani Boosting Station Dehradun	Pump No 1	Mather & Platt	120	400	25	12	MSERW	100	88734	430359.09
2		Pump No 2	Mather & Platt	120	400	25	12	MSERW	100		
3	Shiv Lok Boosting Station Dehradun	Pump No-1	Mather & Platt	65	2500	50	12	MSERW	150	Common meter installed, power Consumption Included tubewell S. No 123 Tubewell	
4		Pump No-2	Mather & Platt	65	2500	50	12	MSERW	150		
5	Kolagarh Boosting Station Dehradun	Pump No-1	Mather & Platt	35	1500	15	12	MSERW	100	Common meter installed, power Consumption Included tubewell S. No 86 Tubewell	
6		Pump No-2	Mather & Platt	35	1500	15	12	MSERW	100		
7		Pump No-3	Mather & Platt	35	1500	15	12	MSERW	100		
Note - 1. In above electricity consumption data electricity consumption of pumphouse, Streetlight, Chlorinator etc installed at pump house premises is also included.											
	2.In boosting Stations electricity department meter is combined, as there is common sectioned electric connection for tubewell and centrifugal pumps hence indicative values may be assumed for seprate consumptions.										

SECTION 3.1
TECHNICAL SPECIFICATION

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TECHNICAL SPECIFICATIONS

1. Design requirements

1 Proposed Automation system shall be designed, manufactured, installed and tested to ensure the high standards of operational reliability. Instruments mounted in field and on

panels shall be suitable for continuous operation. All electronic components shall be adequately rated and circuits shall be designed so that change of component characteristics shall not affect plant operation.

2 All equipment shall be new, of proven design, reputed make and shall be suitable for continuous operation. Electronic instruments shall utilize solid-state electronic components, integrated circuits, micro controllers etc., and shall be of proven design. **The equipment/instruments such as flow meter, level sensor, underground depth sensors etc. should be as per site requirement and in compliance with realistic conditions of site relating to the head, pressure etc.**

3 For transmitting instruments, output signal shall be 4-20 mA DC linear having two/three or four wire system.

4 Unless otherwise stated, overall accuracy of all measurement systems shall be ± 0.25 % of measured value and repeatability shall be ±0.5%.

5 Unless otherwise specified, the normal working range of all indicating instruments shall be between 30% and 80% of the full scale range.

6 The instruments shall be designed to permit maximum interchangeability of parts and ease of access during inspection and maintenance.

7 The field instruments i.e. the instruments mounted outside the control panel shall be mounted at a convenient height of approximately 1.2 m above grade platform and as per the norms for highest level of accuracy.

8 The instruments shall be designed to work at the ambient conditions of temperature, humidity, and chlorine contamination that may prevail. The instruments shall be given enough protection against corrosion.

9 All field instruments and cabinets/panel mounted instruments shall have tag plates/name plates permanently attached to them.

10 The performance of all instruments shall be unaffected for the ± 10% variation in supply voltage and ±5% variation in frequency simultaneously.

2. Broad design considerations for the proposed solution

Each subsystem shall be individually monitored and managed.

For example, generation sub-system shall has a separate monitoring system; in generation, there is a zone wise distribution of the tube wells across the entire Dehradun; here, for individual Zone, there is a local monitoring station which monitors Zone wise Tube wells on the GPRS backbone; Simultaneously, the data would also be transferred to main control station located at the suitable locations.

Such Local/Main monitoring stations shall be equipped with a GPRS system to manage the data traffic and keep the Local monitoring station free for other operations.

All the local monitoring stations shall be linked to the central station called the Master Control Station.

Basic design considerations for designing system of such a magnitude can cover following aspects; these are considered on a macro level basis:

1. Acquiring the important data like water flow, level, pressure, temperature, current, voltage, frequency, events through field instruments. The data could be either digital or analog.
2. Transmit the analog / digital data by means of smart transducers through control cables to the SCADA hardware; identified as Remote Terminal Units (RTU) which are analog / digital modules.
3. Monitor, archive, analyze the logged data and to generate control signals, event history, alarms, management reports and graphical presentation.
4. Transfer of data from the RTU to central LCS or MCS on GPRS communication backbone linking with the Master Control unit
5. Hardware hierarchy at the MCS level suitable to the usage requirements, criticality of data as well as safe and uninterrupted data storage and acquisition
6. Local conditions at each level in terms of stable power supply, geographical conditions, safety conditions
7. Local codes and practices being implemented for instruments, cabling, power supply, installation and safety
8. Possibility of the existing mechanical and electrical elements of each system to modify itself into a SCADA compatible operation (Possibility of transformation to retrofit application).
9. Instrumentation considerations, equipment selection and design parameters for instruments

3. Parameter Monitoring

Any monitoring system based on the concept of SCADA, basically bifurcates the monitoring parameters in to two basic types:

a. Analog parameter
b. Digital parameter

- **Elements in Data Acquisition**

1. Analog Parameter :

An analog parameter provides continuous output. For a typical water system, it can be (say):

1. Flow
2. Temperature
3. Pressure
4. Chlorine content
5. Power
6. Voltage

7. Current
8. Water level
9. Subsoil water level /ground water level

2. Digital Parameter :

A digital parameter provides status or alarm situation for the monitored equipment; for a typical tube well system it can be:

1. Pump status
2. SPP failure
3. Motor Trip
4. Overload Failure
5. DG Status
6. DG Trip
7. Level switch

3. Note on Digital Parameter Monitoring and Control :

Necessary provision shall be made for remote operation of the pump from the local RTU or from any of the control station. All necessary local / remote selector switches and feedback of the pump status along with L / R selector switch position should be in the electrical panel.

4. SCADA interface with Existing Pump SD panels :

In order to have the run and health status of pumps as well as execute On/Off operations from RTU/LCS/MCS, modifications are proposed in some of the Star delta starter panel of each pump; Modifications shall be incorporated in the SD panels. Potential free contacts shall be made available within ATS panel for all signals (status, trip, Overload etc) which ever are being proposed to be remotely monitored. Most panels are beyond up-gradation and hence replacement is proposed for such panels.

Also a 24V AC relay with 2W/2P auto-manual switch shall be wired for remote operation of these pumps. When the switch is in manual-mode, the pumps cannot be operated from the SCADA System but only from local electrical panel. This is important in any remotely operational system for safer maintenance program.

5. Typical Tube Well Station Hardware design

We furnish a typical IO summary chart a standard tube well station having single tube well; these are indicative and bidder has to visit sites for confirmed availability.

#	Description	AI	DI	DO	AO
1	Tube well Run Status		01		
2	Tube well Auto manual Status		01		

3	Tube well On/Off command			01	
4	Tube well Trip Status		01		
5	Trip identification as SPP		01		
6	Trip identification as OL		01		
7	Flow (discharge)	01			
8	UGR / OHT Level	01			
9	Electrical parameters as under				
	Tube well Motor Volts (R,Y,B)	0*			
	Tube well Motor Current (R,Y,B)	0*			
	Tube well Motor Line Voltage	0*			
	Tube well Motor Line Current	0*			
	Tube well Motor PF	0*			
	Tube well Motor Freq	0*			
	Tube well Motor KW	0*			
	Tube well Motor KWH	0*			
10	Intruder alarm			01	
11	DG Set (if utilized at TW)		01		
12	Subsoil water level	01			
13	TW discharge Pressure	01			
14	Power Fail Status		01		
15	Valve Actuator (with % opening)	02			02
16	Automated Chlorine Dozer (with % opening)	01			01
	TOTAL	07	7	02	03

*With Energy Meter

Note: Above I/O are indicative only, however at the minimum it should be 8AI, 16DI, 16DO and 4AO.

4. The SCADA Hardware Specifications

Remote Terminal Unit suitable for IOT flow chart/LD/ST/FBD/SFC Programing language for programming and ease of dibbing.

RTU housing in industrial IP55 or higher enclosure for simplified design; rack mount assembly is not preferred.

7" Touch Screen HMI display to display all the pumping Parameters simultaneously on real time basis. The HMI is used for local operation and set-point control and adjustment.

It should be programmable to display important parameters, mode of operation, signal strength of the GPRS network, current Date/Time, cause of Alarm condition and Scheduling information.

It should be possible by the local HMI to set/change mode of operation, set/change Date/Time, set/change scheduling information and enable /disable alarms on cell by an authentic user having access to the system through a given password. Touch Screen for AUTO/MANUAL, Pump/tube-well ON/OFF, viewing schedule and current date/time, recipe variables, On/Off/Trip/Feedback delay timers, GPRS configurations should also be provided.

The high performance REMOTE TERMINAL UNIT must be designed to log all the Tube well station parameters with time stamping in its NON-VOLATILE memory at the defined logging interval.

The parameter logging interval can be set from 1 reading/ 15 Min locally form the keyboard and remotely from the central control station. The logged data can then be down loaded to the central station PC. The report is generated in Microsoft EXCEL format.

The logged data shall be stored up to 6 months in the REMOTE TERMINAL UNIT and simultaneously transferred to the MCS on real time basis.

LED indication on the front panel shall be provided for the indication of the present mode of operation and for alarm status along with its simultaneous display on the MCS.

The REMOTE TERMINAL UNIT shall be battery backed-up so as to maintain time stamping during power failure of the monitored pumping parameters which can be used in further analysis

The REMOTE TERMINAL UNIT shall be designed to have communication compatibility for wireless mode viz. for GPRS, Radio or wired mode viz. Telephone and serial to transmit data and receive commands remotely. Communication ports shall be required in the SCADA Hardware as per system requirement considering:

- **Remote Terminal Unit Detailed Specifications**

5. <u>Power Supply shall be provided with the following specifications.</u>

1. Input: 230 VAC (range 170 to 270 VAC), 50 Hz OR Output 24 VDC @ 1Amp OR 12 VDC @ 1 Amp
2. Type: SMPS Type for high efficiency.
3. Battery Back-up: 4 hour of Battery back-up for operation of REMOTE TERMINAL UNIT.

CPUs shall be provided with the following specifications.

1. Any processor 120 MHz, 32 bit OR with Higher Performance
2. 32 MB or better RAM on board
3. NON VOLATILE FLASH MEMORY UPTO 4 GB
4. SD Memory 32 GB OR BETTER.
5. Real Time Clock (+/-1 minute accuracy over one month)
6. 7" touch screen HMI on need basis or as per requirement /Authority decision.
7. 12 bit or16 bit high performance analog to digital converter for high resolution of acquired data
8. Watchdog timer to 1.6 sec. that provides a reset signal to the CPU if not toggled due to any hardware or software failure to ensure fail-safe operation.

Analog Inputs:

1. Input Range: 0 - 5 VDC, 4 - 20 mA, avalable for smart instruments
2. 12 bit high Resolution.
3. Input Over voltage protection: +/- 30 VDC Continuous
4. Input Low pass RC (Rejection Circuit). Filter for each channel.
5. High performance Instrumentation amplifier
6. High CMMR (Common Mode Rejection Ratio)
7. Common mode voltage (max) $\pm$ 10 volts

Digital Inputs:

1. Optical isolation
2. 24 VDC inputs
3. isolated inputs between input and internal circuit
4. Input Current per channel: 12 mA @ 24 VDC
5. Current consumption (max) 180 ma @ 5 V
6. On/Off delay times 1.6 msec
7. Local LED status

Digital Output:

1. Contact rating 24 VDC @ 5 amps
2. On /off delay times 3 msec.
3. Local LED status.

Analog Output:

1. Optical isolation
2. Range:, 0-5 VDC, 4 –20 mA
3. 12 bit Resolution

Note: IO must be from same family as CPU & it must be from same manufactures. Optical Isolation must be built in IO card. External Isolation card shall not be accepted.

Communication:

1. Industry standard peripheral interfaces for TOUCH SCREEN HMI
2. 3G/4G /GPRS/NB-IOT fall back MODEM
3. GPS INTERFACE
4. Zig bee RF wireless Interface or equivalent
5. Wi-Fi Enabled
6. POE or Ethernet Port
7. USB interface

Environmental Specification:

1. Operating Temperature: 0 – 60 degrees Celsius
2. Storage Temperature: 0 to 60 degree Celsius
3. Humidity: 95 % condensing
4. REMOTE TERMINAL UNIT shall be complying to IEC – 60068-2-1 / IEC – 60068-2-2 / IEC – 60068-2-30 / IEC – 60068-2-78 / IEC-68-2-6 / IS 9000 Part VIII / IEC-68-2-27 / IEC-61000-4-2 / IEC-61000-4-3 / IEC-61000-4-4 / IEC-61000-4-5 CISPR22
5. Vibration: IS Standard, 5-300 Hz, 0.35 mm / 5 g
6. IP 55 grade protection and UL Certification so that the devices should be electric hazard Free.

Approvals:

1. IEC (International Electro-technical Commission) compliance for REMOTE TERMINAL UNIT internals

   OR

2. NEMA (National Electrical Manufactures Association) / UL / IP Listing for enclosures.

Protection:

1. Short Circuit Protection
2. Surge Protection using Metal oxide resistors.
3. Over Voltage protection
4. EMI (Electromagnetic Interference)/ EMC (Electromagnetic compatibility) protection.

Sr. No.	Description	Specification
1.	**Input /Outputs**	
	Analog Input (Minimum) Input ranges Resolution	8 Differential (EXPANDABLE) 0-5 VDC, 4-20 mA, HART (Optional) 12 bit
	Digital Input (Minimum) Isolation Operational Voltage Specification	16 (EXPANDABLE) Optical Isolated (5000 Vrms for 1 min.) 24 VDC Local indication using LED
	Digital Output (Minimum) Isolation Operational Voltage Specification	16 (EXPANDABLE) Optical Isolated 24 VDC local indication using LED Works on the internal 24VDC. 6-10A continuous current (Resistive load). Pulse on or hold (latched outputs)
	Analog Output (Minimum) Output Range Resolution	4 (EXPANDABLE) 0 to 10 VDC /4-20 mA 12 bit
2.	CPU	120MHz, 32 bit OR with Higher Performance
3.	Programming Memory	NON VOLATILE FLASH MEMORY UPTO 4 GB
4.	Data Memory	32 MB or better RAM on board

Sr. No.	Description	Specification
5.	Long Term Secondary Data Storage	SD Memory 32 GB OR BETTER
6.	RTC (Time Stamped Data Logging)	Real time clock for time stamping (RTC) Battery Backed RTC (20ppm crystal stability)
7.	Analog to digital converter	12 bit or 16 bit Resolution
8.	HMI A. Size B. Type	7”inch Color Touch Screen (capacitive Touch)
9.	Display	TFT LCD Color Display
10.	Communication ports	1 POE Ethernet Port 1 USB Port Capable of communicating using, GPRS, Data call, Satellite, Radio Modem or Serial wired)
11.	Communication Protocol support	REMOTE TERMINAL UNIT should support all of the following protocols. 1. MODBUS TCP, RTU and ASCII 2. IEC 870-5-101 3. IEC 870-5-103 4. Quad band 850/900/1800/1900 Mhz 5. GPRS multi-slot class 10 (default)/ 8 (optional) 6. GPRS max downlink speed is 85.6 kbps. 7. GPRS max uplink speed is 42.8 kbps. 8. GPRS coding schemes CS1, CS2, CS3 and CS4 9. 3G/4G GPRS/NB-IOT GPRS FALL BACK 10. WI-FI x1 (802.11b/g/n) 11. ZIGBEE-RF 2.4 GHz, IEEE

Sr. No.	Description	Specification
		802.15.4, Data Rate: 250 kbps or equivalent 12. GPS INTERFACE (EXTERNAL)
12.	USB Support	1 USB Slave Port
13.	Programming	REMOTE TERMINAL UNIT shall be easily programmable using flow chart/SFC/FBD/LD, programming.
14.	Enclosure	suitable IP55 Enclosure
15.	Operating temperature	0^o to 60^o C
16.	Storage temperature	0^o to 60^o C
17.	Humidity	95% condensing
18.	Vibration	IS standard, 5-300 Hz
19.	Mounting	Wall mounted/Panel mounted
20.	Approvals / Compliance to IEC standards	Compliance to IEC– 60068-2-1/IEC–60068-2-2/IEC – 60068-2-30/IEC–60068 -2-78/IEC-68-2-6/IS 9000 Part VIII/IEC-68-2-27/IEC-61000-4-2/IEC-61000-4-3/IEC-61000-4-4/IEC-61000-4-5 CISPR22
21.	Protections to cater to harsh conditions prevalent in water sector	1. Short Circuit Protection 2. Over Voltage protection 3. Under Voltage Protection 4. EMI/EMC protection
22.	Power Supply	Power Supply shall be of high efficiency of SMPS type with large input range to meet Indian power conditions like: Universal AC input 85V- 264V, 50/60Hz
23.	Battery Backup	The REMOTE TERMINAL UNIT should be provided with suitable UPS and battery, the backup should be minimum 4 hours to ensure that REMOTE TERMINAL UNIT

Sr. No.	Description	Specification
		is able to run / communicate even during power failure.

REMOTE TERMINAL UNIT shall be provided at each location and is ideal for a wide variety of 1 No. shall be provided well suited to meet the needs of SCADA.

The REMOTE TERMINAL UNIT shall be designed to cater the flow measurement, level measurement and the pump operation and control.

The REMOTE TERMINAL UNIT shall have built – in 10/100 Mbps Ether Net / IP port for peer to peer messaging offers users high speed connectivity between controllers, with the ability to access, monitor and program from anywhere an Ethernet connection is available.

The REMOTE TERMINAL UNIT shall have connectivity with 7" Color Touch screen allows to monitor data within the controller, optionally modify that data, and interact with the control program. Display status of embedded digital I/O and controller functions, and acts as a pair of digital trim pots to allow program.

- **Control Logic**

The control logic shall be programmed using intuitive flow chart programming. The flow chart programming software shall have following features:

1. Logic building using flow chart/ SFC/FBD/LD Programming.
2. Debugging tools such as break nodes, break points, watch nodes etc.
3. It shall be possible to define watch variables and modify them during runtime.
4. Extensive recipe management features shall be provided.
5. Detailed project management shall be provided.
6. It shall be possible to see the effect of logic execution using mimic generated.
7. Logic shall be divided into emergency, sequence and interlocks.
8. Interlocks shall be defined a separate block.
9. It shall have a library of timers, counters and PID function blocks.
10. Selector switches shall be provided in individual ATS panels for selecting auto-annual mode.
11. A position selector switch shall be provided for selecting the priority operation of pumps.
12. Indicating lamps (cluster LED type) shall be provided on control panel for status of pumps and motorized valves.
13. Starting and Stopping of pumps, Open close operation of motorized valves, system start, and system stop functions shall be performed through Graphics only.

14. The pump operation will be scheduled based as well as can be level based. Further the pump operation and schedule will be automatically modified for equal run time to take care of power failures.

About the SCADA Software: The software shall have features such that it can perform the tasks as defied in the following sections and shall operate in an hierarchy so that all officer's with rights and department hierarchy can see the necessary information from the field.

- **Local Monitoring Stations**

The SCADA hardware described above shall be acquiring data at substation RTUs which are remotely located and being monitored; the data for these remote substation RTUs will be acquired on a GPRS/**wireless communication** backbone at a LOCAL MONITORING STATIONs.

The LMS will hence be integrating the local intelligent units (RTUs) under its ambit as per the area segregation based on the geographical spread of the system.

The local monitoring station since handles more than one substation RTU, it shall be provided with a GPRS device which shall handle the data traffic between the substation nodes (SCADA hardware) and the respective LMS.

Integration with ICCC to be included. Primary objective of the Tube-well Management System is to monitor the water level, quantitative & qualitative monitoring of water and vital parameters for the Tube-well pump and integrate it with the Integrated Command and Control Centre (Trinity Software) with the help of API and other requisites

An API shall be included for MCSs and LMSs to provide interface capability with the SCADA Data base.

- **Communication Subsystem**

Communication subsystem is the key to the entire project being proposed data from the substation RTUs to Local control Stations and further from Local Control Stations to the MCS shall be communicated though a wireless GPRS communication.

The vendor should have executed a wireless GPRS based SCADA System for water sector.

The system shall have GPRS based communication mode with required accessories. Out of the three communication ports of the RTU, on port shall have GPRS modem connectivity for transmission of data/ receive commands on the cellular communication network.

At the same time, the system alarms at each local station should be available on mobile sets of respective user whose no. is stored in respective RTU hardware.

The user shall even be able to acquire the data of key parameters through an SMS query.

- **Master Remote Monitoring Station**

The master control station or MCS proposed for respective sub-systems (Generation/pumping and sewage) shall be designed to acquire the data from all the respective LMS; here too, a GPRS device shall be provided at the MCS, dedicated to

uninterrupted communication and this GPRS device shall remain ON under all circumstances to ensure that no data is missed.

Information at the Local Control/Monitiring Station and the Master Control Station

Vender need to provide a detail document on the operation of the SCADA software

All operations can be executed from the MCS through extensive graphics support of the package, which also reduces the learning curve of an average Concessionaire. Distribution system Mimic Diagram makes it easy to identify that the entire set up of TW and WW that is generated on the MCS and user at a glance can have to total status information of the system.

While the operation can be carried out from the MCS, all the data logged onto the MCS is then analyzed through representation of this data in various meaningful user defined reports like Excel, PDF etc, graphs, trends and customized analytical requirements of the system.

Reports

One of the most important aspects of the SCADA System is generation of meaningful reports that summarize the huge amount of data acquired by the system. The report generation is a flexible facility allowing different levels of user-defined reports critical for an Concessionaire, Supervisor, Engineer and Chairman. Concessionaire level reports are detailed and timely for making process decision; however, the management level reports are a summary of all information and hence are concise compared to Concessionaire reports.

Customized Reports are provided by Report generator modules of SCADA Software.

Report generator provides flexibility in defining date and time information for scheduling reports as well as for specifying report contents. This means user can have:

a. Yearly, Monthly, daily water production reports

b. Daily water production report comparing today's production to same day's production of the previous month

Reports can be generated automatically in an unattended situation like hourly, shift or daily logs, monthly or yearly summaries of flow.

Reports can be auto saved in the defined and configured folders for archiving.

Alarms

Reports can be printed in response to predefined events such as a Tube Well outage report or a trip log report. Reports can also be printed automatically at predefined time duration.

Covered under the Alarm Monitoring module, this feature provides alarm reports for

a. Limit Cross over (for controlled parameters viz. over pressure, tank overflow,

b. Hardware alarm

c. Communication link alarm

d. Each alarm is time stamped and signaled on the MCS.

e. Severity of alarms is indicated through colour-coded representations of these alarms.

f. Selectable report fields provided by Report generator are as under:

g. Historical Values (Flow, pressure, levels)

h. Calculations based on complex equations (derived flow based on discharge pressure of TW etc)

i. Max/Min/Avg./Total over user defined time interval

j. Date/Time at which Max/Min occurred

k. Current Date and time

l. User defined variables

Trend Displays

Graphical trends for all critical parameters for immediate access to the behavior of a particular parameter over a period of time.

Also covers historical trending of parameters like total water production; this will help not only in concluding the pattern of system utility but also production forecasting after scrutiny of say last five successive years of production.

Graphical Displays

Graphs inter-relating critical parameters which help in evaluating overall system performance. Practically any parameter logged onto the MCS, can be interlinked. A few examples can be:

TW discharge pressure vs. Current consumed to cross check the hydraulic performance and electrical efficiency of the borewells.

Daily Cumulative water production vs. Peak flow rate during the day to ascertain pumping operations in order to meet the daily requirements of the denizens.

From the above, it is clear that huge amount of information logged onto the MCS is systematically presented by the SCADA package for decision making at all user levels.

The content, format and utility of this information in general is different for different levels of usage and it can be further customized for effective decision making of the high level staff of the Authority.

Hence, while the system shall, on one hand, operate the water distribution system to achieve optimum performance, the collection and analysis of the key performance parameters shall be used to further improve the system.

Customization Specifications

Report formats are enclosed at the end of the specifications in this document; vendor to confirm that similar reports shall be generated by the system

It is also desired from the Vendor to give clause wise confirmation to above specifications.

6. SCADA Software Specification

- **Work Stations**

The offered system shall be 64 bit system with a i5 or higher processor with appropriate processing speed. The offered system shall be expandable and chip up gradable in future. The system shall be of reputed international brands like HP, IBM, DELL, etc.

The offered system shall be built around local bus system (e.g. PCI). The RAM shall be 16 GB or more. The system shall consist of 52X DVD drive, with 1 TB HDD Storage capacity, key board, Multi Media kit, mouse (with mouse pad). The mouse port shall be dedicated. The serial ports/Ethernet ports shall be high speed with 16550 UART support. A4 size color ink-jet printer shall be provided. A suitable rating UPS for the work station of reputed make shall be a part of supply.

Suitable Communication MODEM based on the wireless system offered with antenna and accessories shall also be a part of the MCS and MS and workstation should be supplied with USB Mouse and Keyboard.

Important note:

Vendor shall supply full development license for each SCADA node without any restrictions in the number of tags.

- **Operating System**

The monitoring and control software supplied by the bidder for the proposed water SCADA system shall be extremely customized for the applications and shall be:

- A License/development version
- Shall have unlimited Digital and Analog tags

The offered system shall be based on the state of the art 64-bit with a minimum core i5 or better processor with Window 10 .or better processor with Window 10 operating system.

The operating system shall have following features:

a) Multi Tasking.

b) Multi User.

c) Cyber security as per IEC62443 certification or equivalent shall be required for RTU, Firewall, Ethernet Switch and Softwares

d) Networking protocols support.

e) Graphical Users Interface (GUI).

f) WINDOWS emulation.

g) Industry standard RDBMS support.

h) Various Password support.

i) Support for object linking like DDE, OLE etc.

j) Since the data has been demanded on cloud, DSCL reserves the right to demand the same, and analytics thereof, any time on need basis.

- **Application Software**

The application software offered shall be scalable to meet the demands of growing networks. The application software is Web Based and shall be written in HTML responsive framework, the application software can view with all standard Internet browsers and it is browser independent. Similar Mobile Application which can work with any Android or IOS platform is required for remote monitoring from any site.

The application software has following features:

1. Google Map Interface for Location based Asset Monitoring with pin-Point Indicator
2. MIMIC Graphics with 2D/3D and animated images with sound effect.
3. Alarm POP Up notification with sound effect.
4. Reports
5. Live Trends
6. Historical data and Graphs
7. Schedule Configurations
8. Controls through MIMIC graphics
9. GPRS Configurations
10. Creation of Groups for RTU
11. Creation of different Users for Group
12. Any other feature can be added or deleted as per the project requirement

- **Database**

The application software shall have following database features:

a) Database offered shall be capable of accommodating at least :

- status indications
- computed values

b) Instantaneous information:

The On-line/ Real Time data is collection of telemeter misbrands status, manually entered parameters and calculated or derived parameters along with validity flags. Updating should take place as follows:

- Cyclic updating of measured values
- Instantaneous updating of status information.

c) Real-time database.

It should be possible to store various real time/on-line time stamped information, calculated results, event and alarm information in a permanent storage which can be retrieved for the study using the history option. The rate at which storage of the system shall be user-definable.

d) The database operations shall be carried out in the interactive mode from Concessionaires console without interfering with Data Acquisition system.

e) Data protection against accidental or unauthorized changes.

f) High availability.

g) Easy data maintainability.

h) Static database information of water distribution system e.g. size of pipes, joints, pumps etc.

i) Link with industry standard RDBMS for storing ON-LINE data.

j) Dynamic data exchange.

k) It shall be possible to change the limits of particular value while running the system.

l) Authorization: There shall be password protection for data amendment. It shall be restricted to “authorize” persons by password, which can be altered by them only.

m) There shall be facility to exchange real-time data with any other Dynamic data exchange application.

- **Data Processing**

The offered system shall be capable of the following data processing functions:

a) It shall be possible to perform mathematical calculations.
b) It shall be possible to perform logical operations.
c) It shall be possible to program control logic. The programming software offered shall allow development of complex control logic using flow chart/ SFC/FBD/LD programming. Due to intuitive nature of flow chart/ SFC/FBD/LD programming and ease of programming, enigma desires to use it for programming of control logic. The flowchart/ SFC/FBD/LD programming tool offered shall have facility for validating the logic developed, carrying out simulation runs, to control the process and to provide an Concessionaire interfaceThe software shall be capable to add pseudo measurements.

- **Mimic Generation**

The Application software shall consist of a built-in module for mimic generation. This function can be used for creating complex process diagrams using basic drawing entities and a library of pre-defined symbols. It shall be possible to represent a measurement as a digital readout, dial, horizontal bar, and vertical bar. It shall be possible to customize alarm massages window anywhere on the screen.

It shall be possible to create a detailed customized data acquisition / control screens by simple click and drag icons.

It shall be possible to create backgrounds using scanned photographs, maps, one-line diagrams, engineering drawings etc using popular graphics or engineering applications which can save images in bitmap formats.

- **Mimic Display**

It should be possible to create new process diagrams that represent various sections of the water distribution network at different levels of details using the mimic generator package.

A Uniform Mimic Color Scheme shall be followed

Readability of mimics can be improved by use of appropriate color scheme. It should be possible to color code the entire water distribution network based on flow rates, location, number of consumer's etc.

Performing Pump Operations from Within Mimic

It shall be also possible to perform pumping operations from within mimic displays by just taking his cursor to the pump that he wants to operate and double click. This shall display a dialog box on the screen that displays the current status of the equipment. Concessionaire shall be able to toggle this status and upon confirmation the actual operation shall be performed.

Switching Between Mimics

A list of all available mimics shall be displayed in a menu that can be invoked by selecting the mimic menu option. User can then select the mimic of his choice and on confirmation the selected mimic should be displayed.

Alternatively, a list of 6 mimics shall be always displayed on the bottommost line of the mimic. User can view its description in the right bottom portion of the screen by just taking his cursor over the mimic name. To select any mimic just click at the mimic name

Database Functions That Can Be Changed Online:

A highly flexible database editor shall be provided for configuring analog channels that allows as many as 28 fields to be changed/specified on-line.

<u>Editable Analog Database Fields</u>

Name

Tag Description

Channel Number

Units

Sensor Type

Scan Frequency depending upon the network Availability

Scan Skip Flag

- The options available shall be:
- Square Root Extraction
- Reasonability Limits

- Group/Section Assignment
- Trend Page Assignment
- Trip Group Assignment
- Historical Group Assignment

H-L Alarm Limits
HH-LL Alarm Limits
EH-El Alarm Limits
Rate of Change Alarm Limits
Significant Change Limit
Alarm Priority

- Critical
- Normal Priority and
- Low Priority.

Alarm Dead Band
Zero Dead Band
Annunciator Output
Alarm Inhibit
Equation
Device Tagging

Editable Digital Database Fields

Tag Name
Tag Description
Channel Number
Alarm Code
The following codes shall be available.
Alarm Code #1)“ TRIP” / “ NORMAL” ,
Alarm Code #2)“ RUN” / “ STOP”,
Alarm Code #3)“ OPEN” / “ CLOSE” ,
Alarm Code #4)“ UP” / “ DOWN”,
Alarm Code #5)“ FULLOPEN” / “INTRANSIT” ,
Alarm Code #6)“FULLCLOSE” / “INTRANSIT” ,
Alarm Code #7)“ CLKWS” / “ ACLKWS” ,
Alarm Code #8)“ FULL” / “ EMPTY” ,
Alarm Code #9)“ OFF” / “ ON” ,
Alarm Code #10)“ FAST” / “ SLOW” ,
Alarm Code #11)“ TOP” / “ BOTTOM” ,
Alarm Code #12)“ NORMAL” / “ FIRE” ,
Alarm Code #13)“ NORMAL” / “ ABNORMAL” ,

Group Assignment
Trip Group Assignment
Device Tagging

Alarm Priority
Annunciator
Normal Status
Skip Flag
Historical Group Assignment
Alarm Inhibit
Auto/Manual Override
Status
Calculated

Graphical Historical Trending Functions

This option would allow trending of historical data. The various data types that should be possible to trend shall include:

Historical Data Types

The possible data types as follows:

Historical Data

This data type refers to the data that shall be logged using standard logging frequency and duration as specified by the system manager. The default logging frequencies required is 15 seconds, 30 seconds, 60 seconds, 5 minutes and 15 minutes and user shall be free to select any one of them. Moreover, to avoid disk full condition due to huge amount of data, these files should be deleted by the system after specified number of days. This data shall be therefore available only for a limited duration.

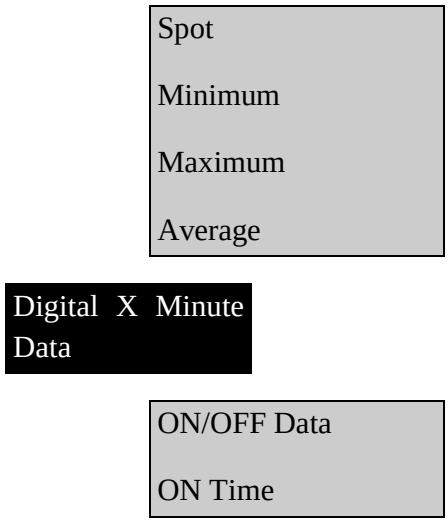
Hourly Data

Analog Data
Spot
Minimum
Maximum
Average
Digital Data
ON/OFF Data
ON Time

This data type refers to standard logging frequency of one hour and all database channels are logged.

User Defined Data

Analog X Minute Data



This option shall be similar to hourly data option, the only difference being the logging frequency, which is specified by the user during initial system configuration.

Special Data Type

If user has specified any particular logging frequency and logging duration, he can retrieve that data using this option.

Historical Trend Display Options

The following options shall be provided to facilitate historical trend display.

Hide Trend Channel

Unhide Trend Channel

H-L Limit

HH-LL Limit

EH-EL Limit

10% +

10% -

Tabular Historical Data Display Functions

An option for tabular display of the historical data shall also be provided.

Spread Sheet Options

The following options shall be provided under this option:

Change Date of Data Being Displayed

Change Time of Data Being Displayed

Edit Historical Data

Save Historical Data

- **Report Generation**

The report generation module shall consist of the following:

a. The report shall be able triggered based on time, event or user defined demand.

b. It shall be able to generate shift reports, daily reports, monthly reports, yearly reports from the historical database.

e. It shall be possible to print reports on demand, scheduled or automatically triggered by an event or time of day.

f. Facility should be provided for scheduling of reports automatically at the end of hour, shift or day. It should be possible to schedule reports multiple times within a day based on the user-defined times.

g. Peak Demand: Based on the data already collected the system should be able to carry out the following:

- Hourly/daily/weekly/monthly/yearly peak demands
- Peak demand for individual stations
- Any other feature can be added or deleted as per the project requirement.
- It should also be possible to graph out the above information on screen and well as on the Printer in different colors to allow proper Differentiability.

A number of standard reports shall be provided to enable use of the system from day one.

Sample Standard Reports to be provided

Some of the standard reports required are:

Demand Log Report

This report prints the current status of all parameters at the time of request.

Alarm Summary Reports

This report gives a list of all the channels that are in alarm or have returned back to normal but are not yet acknowledged the date and time at which the channel went into alarm shall be shown. Moreover, for normal channels the time when that channel returned to normal shall be also shown.

Spot Group Logs

This report is quite similar to the demand log, the only difference being that parameters belonging to a specified group or groups shall only print.

Historical Group Log

This report is similar to the spot group log report except that user can generate report based on the historical data that is logged.

Hourly Log Reports

These are logs that are printed at specific time intervals. However, in case printer in not on-line at that time, a facility shall be provided to print these reports on demand. The following types of logs shall be provided.

Hourly log

This log shall be initiated every hour and shall print out the hourly maximum/minimum and average values for the previous hour.

Shift log

Every 8 hours or at manager defined interval, shift log shall be printed out. This report consists of average, minimum and maximum values for each analog channel for the previous eight hours.

Daily log

This log provides information about average, minimum and maximum values of the entire day for each channel.

Daily Deviation Log

In any SCADA system it is of prime important to the user to know how his process variables have fluctuated during the day. This report shall provide exactly that information. For each process variable, reports of its maximum value along with its time of occurrence, minimum value along with its time of occurrence and running average value of the parameter shall be printed.

Event List

This report prints a list of events that match the following inputs.

Start Date

This defines the start date from which events should be searched.

- Start Time
- This defines the start time from which events should be searched.
- End Date
- This defines the date till which events have to be searched.
- End Time
- This defines the time till which events have to be searched.

Parameters (Analog)

User shall have the flexibility in defining the parameters that he wants to get reported.

Parameters (Digital)

This option allows for selection of digital channels and shall be similar to the one above.

Alarm Types

User can also select the alarm types that he wants to view.

Alarm/Event Display

It is required to appear the alarm on the SCADA PC and Mobile Sets of specified users. The alarm generation module shall consist of following:

a. The module shall provide monitoring the data acquired from field I/O devices, internally calculated points, on event bases and shall provide real time alarms.

b. There shall be facility to acknowledgement of each and every alarm generated using various options.

c. There should be a provision for individual acknowledgement of alarms and alarm display should provide information on whether a particular alarm has been acknowledged.

d. There shall be provision to assign different user defined priority levels.

e. The system should support six or more levels of alarms. Each alarm type should be displayed in different user configurable color to allow easy differentiability.

f. In case of more than one RTU, the RTU name of the channel in alarm should also be indicated.

g. It should be possible to retrieve alarms on the basis of the following conditions.

Start date and Time

- End date and Time
- RTU source
- Type of alarms
- Alarm Priority

Alarm Schedule

The following alarms shall be annunciated on the control panel, appear on the SCADA Computer and on the mobile sets

- Pump tripped on overload
- Pump tripped on SPP
- High level in OHT
- Low level in OHT
- Pump failed to start
- Pump failed to stop
- Motorized valve failed to open

- Motorized valve failed to close
- Emergency stop operated

The alarm schedule is indicative only. The contractor shall provide all alarms necessary for annunciation in order to achieve control and monitoring requirement.

Customized Reports:
Web Based SCADA shall be customized and programmed considering Water Application Modules and reports are necessary for Town Water Management system:

- Zone wise Monitoring

Following reports are required for monitoring and planning.

- Zone Wise TW or Pump ON Status
- Zone Wise TW or Pump OFF Status
- Zone Wise TW or Pump TRIP Status
- Zone Wise TW or Pump RTU Communication Status
- Zone Wise Total / Individual Pump Run Hour
- Zone Wise Total/ Individual Total Flow
- Comparative Summary Reports Run Hour Vs Total Flow
- Individual Energy Parameter Reports

Summary of all Zone TW/Pump ON/OFF/TRIP/Communication Status

7. Instrumentation & Cabling

- **Instruments**

Level Indicator with Transmitter

An ultrasonic type level transmitter is being specified for continuous monitoring of the water level at the MCS and for the logical operation of the pumps based on water level

1	Particulars	1 no for OHT
2	Type	Ultrasonic measurement
3	Operating temperature	0 ° C to 60 ^{0}C
4	Sp. Gravity	1.0

5	Viscosity	1.0
6	Accuracy	±0.25 % of range
7	Resolution	0.2 mm
8	Measuring range	0 – 5/10 meter
9	Power supply	15 to 24 V DC
10	Current output	4 – 20 mA, 2 wire
11	Enclosure	ABSXIP65

Flow transmitter- Full bore

1	Type	Electromagnetic full bore
2	Pipe size	80 mm to 500mm
3	Ambient temperature of fluid	0 to 60 deg C.
4	Accuracy	+/- 0.5 % of reading
5	Output	4-20 mA
6	Electrode	SS 316
7	Power supply	250 V AC
8	Velocity	0.3 to 10 m/s
9	Coil housing	Coated steel/ Carbon Steel MOC
10	Pressure	PN10
11	Display	16X2 LCD
12	Protection	IP 67

Pressure transmitter

1	Type	Diaphragm type
2	Pressure range	13 to 500 psi
3	Diaphragm material	SS 316L
4	Output signal	1-5 V DC, 4-20 mA optional
5	Zero and spam offset	+/- 0.25% of FSD @ 21^0C
6	Accuracy	+/- 0.25% of FSD @ 21^0C
7	Long term stability	+/- 0.25% of FSD/year
8	Input power	10-30 V DC
9	Reverse polarity	Protected
10	Burst pressure	200% of rated range

Sub soil water level transmitter

1	Particulars	To measure underground water level
2	Type	Hydrostatic level measurement
3	Ranges	0 to 1 meter / 0 to 180 meter
4	Operating temperature	0 to 60 deg C.
5	Accuracy	+/-0.5%
6	Power supply	10 to 30 V DC
7	Current output	4 – 20 mA
8	Level probe	SS 316

pH Analyzer

1	GENERAL	SPECIFICATION

1	SENSORS	
1.1	TYPE	Combination electrode
1.2	ELECTRODE CONNECTION	Manufacturer Standard
1.3	TEMPERATURE RATING	0º C – 60º C
1.4	PRESSURE RATING	6 Bar
1.5	SHAFT MATERIAL	Glass
1.6	DIAPHRAGM	Single Pore/Ceramic - 1 nos
2	TEMPERATURE SENSOR	NA
2.1	REFERENCE ELECTROLYTE	Manufacturer Standard
2.2	REFERENCE ELECTRODE	Manufacturer Standard
2.3	ELECTRODE HEAD	Manufacturer Standard
2.4	CABLE	Low noise Co-axial cable of 5 meters
2.5	SENSOR LENGTH	120 mm
3	TRANSMITTER	
3.1	TYPE	Microcontroller based, 2-wire transmitter
3.2	pH	0-14PH
3.3	TEMPERATURE	0º C TO 60º C
3.4	SPAN	2pH – 14pH
3.5	DISPLAY	LCD display, programmable along with conversion factor
3.6	CURRENT OUTPUT	4-20 mA DC
3.7	CALIBRATION	Single/Dual Point Calibration
3.8	TEMPERATURE COMPENSATION	Automatic or Manual (PT 100/ PT 1000
3.9	POWER REQUIREMENTS	12 – 36 VDC with maximum load 600 Ω
4	ENCLOSURE MATERIAL	Die-cast Aluminium (LM6) with epoxy paint (Non - corrosive
4.1	MOUNTING TYPE	2" Pipe Type (Vertical
4.2	PROTECTION CLASS	IP 67
4.3	AMBIENT TEMPERATURE OPERATINGRANGE	0º C TO 60º C
4.4	ELECTRODE HOLDER	To be supplied along
4.5	HOLDER TYPE	Flow thru chamber
4.6	MOC	SS

Chlorine Analyzer

1	GENERAL	Specification
1	MANUFACTURER	To be mentioned by the Supplier
1.1	MODEL NUMBER	To be mentioned by the Supplier

1.2	QTY	As per BOQ
1.3	INSTRUMENT RANGE	0 - 5 PPM
1.4	RESOLUTION	0.01 PPM
1.5	ACCURACY	
1.6	RESPONSE TIME	90% in 60 seconds
1.7	UNIT DISPLAYED	PPM
1.8	TEMP UNITS	°C, °F
2	SAMPLE CONDITIONS	
2.1	PROCESS TEMPERATURE	-5 TO 45 DEG C
2.2	INLET PRESSURE:	4 BAR
2.3	FLOW RATE:	> 30 Lit / Hr
2.4	MINIMUM CONDUCTIVITY	>150 MICRO S/CM
2.5	SAMPLE CONNECTIONS	Manufacturer Standard
3	SENSOR	
3.1	ELECTRODES	Potentiometric/Amperiometric
3.2	SELF CLEANING	AUTOMATIC SELF CLEANING SENSOR (Optional)
4	TRANSMITTER	Microprocessor based
4.1	NO. OF ANALOG OUTPUTS:	3 CURRENT Outputs
4.2	DISPLAY	Manufacturer Standard
4.3	OUTPUT SELECTIONS	0-20 mA, OR 4-20 mA
4.4	ALARM OUTPUTS	3 relays (NO/NC) FULLY PROGRAMMBALE
4.5	ph compensation	AUTO/ MANUAL COMPENSATION
4.6	POWER SUPPLY	100--230 VAC 50/60 HZ OR 24VAC/DC

Turbidity Analyzer

ONLINE TURBIDITY ANALYZER

MEASURING RANGE	0/4.000, 0/40.00, 0/400.0 & 0/4000 NTU 9 -999 / 99 - 9999 PPM of SiO2 9 – 999 / 99 – 9999 mg/l of SiO2
SAMPLE TEMPERATURE	0 - 50°C
SET POINT	TWO(HIGH & LOW)SELECTABLE
TWO ANALOGUE OUT PUTS	: 0-20mA / 4 – 20 mA R max 600OHMS (ISOLATED
POWER SUPPLY	110 / 220 V ± 10%, 50Hz AC SELECTABLE
DDISPLAY	ALPHANUMERIC BACK-LIGHTED LCD DISPLAY
OPERATION	MANUAL AUTOMATIC&AND SIMULATED OPERATION
CALIBRATION	AUTOMATIC ZERO CALIBRATION AT EVERY MEASURING CYCLE
TURBIDITY PROBE	
RANGE	0 - 4000 NTU
RESOLUTION	0.001 ON SCALE 0/4.000 NTU, 0.01 ON SCALE 0/40.00 NTU 0.1 ON SCALE 0/ 400.0 NTU 1 ON SCALE 0/ 4000 NTU
ACCURACY	± 5% OF READING ON 0/400 NTU ± 10% OF READING ON 0/4000 NTU
LIGHT SOURCE	LED I.R. 890nm
BODY MATERIAL	SZ-9481 (10 METER

Energy meter

Sr. No.	Description	Specification
1	Type	True RMS Microcontroller based design ∅ 4W/3 ∅ 3W Balance & unbalanced operation
2	Accuracy class	1/ 0.5 (OPTIONAL)
3	Cut out size	92 x 92 mm Bezel: 96 x96 x mm
4	Suitable for	Multi parameter monitoring
5	Display	16 x 1 / 16 x 4 LC display

6	Casing	Compact 96 x 96 DIN enclosure
7	Key Pad	3 Functional keys to scroll through display pages for system values and programming parameter.
8	Auxiliary Supply	230 V or 110 V AC
9	Voltage Input	415 V or 110 V AV (field configurable)
10	Current rating	5A or 1A AC (field configurable)
11	Load range	120 % to 0.4% of rated CT primary
12	Operating P.F.	ZERO LAG to UNITY to ZERO LEAD
13	Communication	RS 485 output port Standard MODBUS RTU Protocol
14	Temperature	0 to $60^{O}C$
15	Storage	$-20^{0}C$ to $+70^{0}C$

Isolation Transformer

Sr. Nos	Description	Specification
1.	Make	Reputed
2	Primary	0-380V-440V-470V
3	Capacity:	300 VA
4	Insulation	2.5 Kv
5	Rated Temperature	55 deg. C
6	Frequency	50 Hz

with required DIN rail mounted glass fuse type 4 sq. mm screw terminals and with extended bottom mounting angle; in output side to provide push in type terminals 4 sq mm rating

GPRS MODEM

SNO	Description	Specification
1	FREQUENCY BAND	QUAD BAND 900/1800 MHZ

2	NETWORK	2G,3G,4G
3	POWER SPECIFICATION	7VDC TO 36 VDC (12VDC,1A NOMINAL)
4	OPERATING TEMPRATURE	–40°C to + 85°C
5	Accessories	RS232 Cable, Aluminum Casing
6	Casing	With Casing
7	Baud Rate	Auto Baud Rate Feature Inbuilt Range: 2400 to 460800

Over Voltage Under Voltage Trip Protection

Sr. Nos	Description	Specification
1	Make	Reputed
2	Supply Voltage	380-440 V AC
3	Over Voltage/ Under Voltage	Variable setting
4	Output Contact	2CO
5	Trip setting	Yes
6	Trip time delay	Yes
7	Resetting Mode	Auto/Manual/Remote

Motorized Actuator

Actuators specified below are to be installed on the discharge line of respective sluice valve of the pump. All the valves shall be operated by an electro mechanical actuator, comprising of motorized gear train and screw assembly which drives the valve stem. The actuator shall be supplied with the following accessories.

- 3phase, 415 V, ± 10%, 50 Hz. ± 5%, A.C. squirrel cage induction motor.
- Reduction gear unit.
- Torque switch mechanism complete with set of torque
- Limit switch mechanism complete with set of limit switches.
- Hand wheel for manual operation.

The actuator shall be suitable for operation in the climate conditions and power supply conditions given in the specification. The actuator shall be capable of producing not less than 1½ time the maximum required torque and shall be suitable for at least 15 minutes continuous operation.

Valve operational requirements:

The operation of valves must be sequential w.r.t the pump operation. It should be 4-20 mA compatible for % opening.

As the pump starts, the valve shall start to open and reach 70% opening (identified by a limit switch) only after the complete pressure / full pump speed is reached, does the

Valve open 100%; the operation of this valve shall be based on time sequence w.r.t start time of respective pump.

Actuator Specifications

Sr. No.	Description	Specification
1	Type	Three phase rotary / multiturn, quarter turn and linear
2	Enclosure	Standard/Flameproof version
3	Output speed	10-426 RPM
4	Output torque max.	30 MKG
5	Locking system	Self locking/ Non – self locking
6	Drive kW/HP	0.75/1 to 2.2/3
7	Drive Speed	1500/3000
8	Maximum Axial Thrust Capacity	12000 kgs
9	Output shaft designs	As per DIN 3210
10	Mechanical stopper	Adjustable
11	Coupling to suit	Butterfly valves, Sluice Valve
12	Gear reduction ratio	100:1 (max)
13	Type of gear box	Spur gear/worm gear
14	Supply Conditions	
	a. Rated voltage	415 VAC ± 10%
	b. Rated frequency	50 Hz ± 5%
	c. Combined variation	± 10%
	d. NO. of Phases	3 Phase (4 wire)
15	Reference Standards	I. S. 325, IEC34, VDE 0530,BS 2613
16	Type of motor	TEFC (Totally Enclosed Fan Cooled, Squirrel cage, Induction.) / TESC (Totally Enclosed Surface Cooled) for IP 67 / 68
17	Drive Frame Size	80/90
18	Rotor Class	KL 60
19	Protection	IP 65 as per IS 13947 Part I 1993
20	Class of Insulation	Class 'F' with temperature rise restricted to class 'B'
21	Duty cycle	As per IS 325 - S1 continuous (S4 - Modulating as a Special case) OR (S2 - 15 / 30 min as a special case.)
22	Method of starting	DOL - Direct on line with suitable actuator Panel

23	Reference ambient temp	50° C
24	Motor paint	corrosion proof epoxy resin paint
25	Motor duty	S1 Duty motor suitable for
		3 Nos. of consecutive starts in hot condition
		8 Nos. of starts distributed over 15 minutes.
26	Travel Switches	1 NO + 1 NC
27	Micro Switch	
	a. Torque Switches	1 NO + 1NC
	b. Travel / Torque Switches	2 NO + 2 NC

Electricals

Actuator Panel

Sr. Nos	Description		Specification
1.	Make		Reputed
2	Switchgear		
		Relay	AC,DC
		Contactors	2Nos
		Operational Voltage	415V Ac
		Indication Lamp For Open ,Close and Fault,3Phase	6
		Remote Local Switch	1
		Open Close Switch	1
		Isolation Transformer	1
		Overload Relay	1
		3 Pole MCB	1
		Terminal For Cable Termination	As required

Should be the Integral Part of the Integrated Panel and able to operate the actuators in

Manual as well as auto mode and should have required no of

- Relays
- Contactors
- Indications lamps
- Remote Local Switches
- 415 V , 50 Hz
- Should Be Fully compatible with Actuator supplied

Electrical starter panel – SD and Soft Starter

The **Star Delta** Starter is a very common type of starter and is used extensively as compared to the other type of starting methods of the induction motor. A star delta is used for a cage motor designed to run normally on the delta connected stator winding. The connection of a three-phase induction motor A **soft starter** is a solid-state device that protects AC electric motors from damage caused by sudden influxes of power by limiting the large initial inrush of current associated with motor startup. They provide a gentle ramp up to full speed. Below are the specifications of both type of starter.

General Specification:

- Wall/floor mounting type
- non compartmentalized
- dust and vermin proof, IP 54 protection
- 16 SWG CRCA sheet, powder coated with Siemens grey shade
- 415 V, 50 Hz
- single/double door, bottom gland plate, earthling terminal

CONTROL PANEL

Sr No.	ITEM	RATING	QTY.
1	Switch Disconnector semiconductor fuse unit and MCCB for protection of Soft Starters	As req.	1 No.
2	HRC fuse link	As req.	3 Nos.
3	HRC Control fuse	20/6 Amp.	7 Nos.
3	Main Contactor 230 Volt	As req.	1 No.
4	Delta Contactor 230 Volt	As req.	1 No.
5	Star Contactor. 230 Volt	As req.	1 No.
6	Thermal over load relay	As req.	1 No.
7	96sq.mm Ammeter.	xx/5 Amp.	1 No.
8	96sq.mm Volt meter.	0-500 V.	1 No.
9	A & V meter selector switch	6 Amp	2 Nos.
10	Auto manual selector switch	6 Amp.	1 No.
11	Current Transformer	xx/5 Amp.	3 Nos.
12	LED type indicating lamp Red for R,Y, B, ON, OFF, O/L TRIP,SPP& ELR	22.5mm	8 Nos.

13	Push Button for START,STOP,O/L RESET & Timer fail	22.5mm	3 Nos.
14	Plug in type relay for RTU operation 2 C/O 230 Volt	6 Amp.	5 Nos.
15	Single phasing preventer with High/Low voltage cut off.	Voltage Sensing	1 No.
16	Electronics Timer	0-30 sec	1 No.
17	Earth leakage relay with CBCT	0.5 to 2.5 A.	1 No.
18	Panel cooling fan 230 V.	120 mm	2 Nos.
19	Switch with socket combined unit.	15/5 Amp.	1 No.
20	Filter Grill kit.	120 mm	2 Nos.
21	Lamp with Holder	40 Watt	1 Set.
22	Plug in type relay for RTU operation 2 C/O 24 V DC	6 Amp.	1 No.

SOFT STARTER PANEL (Inline Type) SPECIFICATION

Sr.No	Items	RATING	Qty
1	MCB	As required	1
2	MCCB	As required	1
3	CONTACTOR	As required	2
4	SOFT STARTER Make	As required	1
5	GF WITH LINK	As required	3
6	GREEN PB WITH NO	As required	1
7	RED PB WITH NC	As required	1
8	IND.LAMPS	As required	1
9	RED IND.LAMPS	As required	1
10	GREEN IND.LAMPS	As required	1
11	SPP	As required	1
12	CT 5VA	As required	3

13	CONT, TRANSFORMER 200VA	As required	1
14	EXHAUST FAN WITH AIRVENT	As required	1
15	CONTROL SP MACB	As required	1
16	PLUG IN TYPE RELAY	As required	2
17	PLUG IN TYPE RELAY	As required	1
18	A/M SWITCH 3P 2	As required	1
19	MS ENCLOSURE	As required	
20	TERMINALS	As required	7

APR PANEL SPECIFICATION

SNO	DESCRIPTION	RATING	QUANTITY
1	CONTACTOR	As required	2
2	ACB FIXED TYPE	As required	2
3	GF WITH LINK	As required	4
4	GREEN PB WITH NO	START	1
5	RED PB WITH NC	STOP	1
6	STAY PUT EMG.STOP	STOP	1
7	RED IND.LAMPS	RYB SEQ.	1
8	RED IND. LAMPS	RBY SEQ,	1
9	SPP	3PHASE	1
10	TIMER	ON DELAY	1
11	A/M SWITCH SP 2W	6A	1
12	MS ENCLOSURE	APD	1
13	BUSBAR	As Required	1

Cable

- Following types of cables shall be supplied laid and terminated as per instructions provided.
- Copper 1.5 Sq. mm control cables from RTU panel to field sensors.

- Control cables for Aux. Supply to transducers
- GPRS cable between MCS/RTU and modems
- Any other cables required for the job.
- Control cables shall be of 1100 Volts grade, electrolytic copper conductor, PVC insulated, extruded PVC inner sheathed.
- Communication cable if used anywhere shall be twisted pair multi-core 1.0 Sq mm, Braided & Aluminum Foil Shielded & Screened as per Belden standards.

8. Installation Specifications (General)

Cable Installation Specifications

- The contractor shall follow all the ISI rules & regulations.
- Cable shall generally be installed in trenches and buried in ground except for some short run in trays below the floor. Cables are laid on trays and risers shall be neatly dressed and clamped at an interval of 1500 mm and 900 mm for horizontal and vertical cable runs.
- The clearance between electrical power & data cables must be maintained 6" min. throughout the route.
- The crossing of electrical power & STP cable shall be at 90° only.
- The shield of cable must not be removed up to cable entry to I/O.
- The twist of cable must be maintained up to final termination.
- The insulation twist shield shall not be damaged while pulling the cable.
- The cable loop of 200 mtr. shall be provided at each termination end.
- Each cable run shall be tagged with number that appears in the cable schedule. Cables shall be tagged at their entrance, every 30 mtr and exit from any equipment, junction box. The tags shall be of aluminum with number punched on it and securely attached to the cable by not less that two turns of 16 SWG G.I. wire.
- The termination and connection of cables shall be done strictly in accordance with drawings and/ or directed by the Engineer. The work shall include all clamping, glanding, fitting, fixing, tapping, crimping and grounding as required.
- The vendor shall perform all drilling, cutting on the gland plate and any other modification required and plugging the extra holes. The vendor shall provide on control cable cores at all terminations. Termination and connections shall be carried out in such a manner as to avoid strain on the terminals.

- The vendor shall supply the required cable glands of suitable type and size. Cable glands shall be of heavy duty, tinned brass, single/ double compression type complete with necessary armor, clamp and tapered washer etc. Cable gland shall match with the size of different control cables. They shall provide dust and leak proof terminations.
- The vendor shall make every effort to minimize wastage during erection work. In any case, the wastage shall not exceed 2.5 % for total quantity of cable supplied.

General Installation

- Phasing out NO/NC contacts in panels for breaker auxiliary switch for on/off indications, along with necessary wiring.
- Phasing out of spare NO/NC contacts in panels for "Auto Trip" indication with necessary wiring.
- Installation, earthling, testing and commissioning of RTU panel along with necessary wiring for above mentioned points.
- Supplying, installation, testing and commissioning of hardware, peripherals etc.
- Supplying, installation, testing, customization of software's.
- Submission of cable schedules, wiring schedules, test reports, final "AS BUILT" drawings etc.
- Handing over the system as a whole after becoming fully operational to the Enigma.
- Although it may not be specified here, but all other work required for successful installation, testing and commissioning shall be in vendor's scope.

Installation of instruments

- Flow meters if asked for shall be installed according to the recommended practices to ensure full bore arrangement; installation shall be carried out with all necessary fittings and fixtures by piping vendor; supply, testing and performance guarantee of the flow meter to shall be a part of the contract of SCADA Vendor.
- Instruments like Level transmitter shall be installed by SCADA Vendor, only according to accepted standards and specifications.
- Actuator shall be installed by by the SCADA Vendor on the Existing Valve depending on the Valve condition non repairable value shall be removed by the SCADA vendor with new Motorized Actuator valve assembly
- Necessary loop power supply for operation of instruments like Valve etc shall be provided by UJS.

Annexure-4

LIST OF APPROVED MAKES

S.No	Items	Makes
1	RTU	ABB/Omron/Wago/Cimcon/Delta/Rockwell/Honeywell/Yokogawa/Schneider or Equivalent*
2	SCADA	ABB/Delta/Honeywell/Cimcon/Wonderware/GE/Siemens/Yokogawa/Schneider/Aqualogix or Equivalent*
3	Flow meter	Krohne Marshall/E&H/ABB/Siemens/Zenner or Equivalent*
4	Pressure Transmitter	Honeywell/Danfoss/ Siemens/ E&H/ Emerson/ Forbes Marshall/Baumer or Equivalent*
5	Level Transmitter	Siemens/ Wika /Techtrol/ E&H/ P&F/Banner ABB or Equivalent*
6	Valve Actuator	Marsh/ Auma/ Rotork/ IVC /Cair or Equivalent*
7	Automated Chlorinator	Toshcon Jesco/ AQUAS/ Pristine or Equivalent*
8	Chlorine Sensor & Analysers	B&C/ BOQU/ Jishen/ Emerson/ Hach/ E&H/ ABB/ Jumo or Equivalent*
9	CI/DI Sluice Valve	KBL/ Kartar/ VAG/ IVC/ Fouress/ KSB/ Kirloskar/Ventile/LP or Equivalent*
10	Depth Sensor	Micro Sensor/ Siemens/ E&H/ Aqualogix/ABB/Jumo or Equivalent*
11	Energy Meters	Siemens/ Delta/ El measure/ L&T/ Cimcon/ Schneider or Equivalent*

NOTE: *The selected bidder shall get approval of the makes, if he intends to procure other than the mentioned makes, from Dehradun Smart City Limited before procurement of the same.

Annexure-5

Site Survey Details of Tubewells (Under: Uttarakhand Jal Sansthan)

Sr. NO.	Tubewell Name	Division	Coordinates
1	Matawala Bagh OHT	South	Latitude-30.312903 Longitude-78.024712
2	Patel Nagar	South	Latitude-30.312903 Longitude-78.024712
3	Niranjanpur 2 SGRR	South	Latitude-30.306017 Longitude-78.01936
4	Niranjanpur 3	South	Latitude-30.8436 Longitude-78.018697
5	Niranjanpur 1	South	Latitude-30.307173 Longitude-78.016506
6	Niranjanpur 4	South	Latitude-30.29823 Longitude-78.015713
7	Derakhas	South	Latitude-30.300747 Longitude-78.024354
8	Pathri Bagh	South	Latitude-30.307395 Longitude-78.022214
9	Matawala Bagh 2	South	Latitude-30.316999 Longitude-78.022885
10	Hindu national School	South	Latitude-30.319484 Longitude-78.022928
11	Bannu School	South	Latitude-30.306783 Longitude-78.042141
12	Nehru Colony (I) Block	South	Latitude-30.302678 Longitude-78.055168
13	Nehru Colony (I) Park	South	Latitude-30.301546 Longitude-78.058935
14	Nehru Colony Nadi Kinara	South	Latitude-30.300251 Longitude-78.060614
15	Nehru Colony (H) Block (UJS)	South	Latitude-30.299287 Longitude-78.059534
16	Nehru Colony (5)	South	Latitude-30.29908 Longitude-78.057202
17	Nehru colony 3	South	Latitude-30.30114 Longitude-78.05474
18	Nehru colony 4	South	Latitude-30.299925 Longitude-78.052182
19	Nehru colony 1	South	Latitude-30.302285 Longitude-78.022928
20	Nehru colony 2 Dhrampur	South	Latitude-30.303236 Longitude-78.047873
21	Chandan Nagar	South	Latitude-30.311852 Longitude-78.03842
22	Indresh Nagar (Jhanda Mohalla)	South	Latitude-30.319665 Longitude-78.026745
23	Tehsil Parishad	South	Latitude-30.321362 Longitude-78.040308
24	Tagore Villa	South	Latitude-30.325902 Longitude-78.034437
25	Khubra city Board	South	Latitude-30.325558 Longitude-78.031925
26	Khubura SGRR	South	Latitude-30.323533 Longitude-78.028633
27	MDDA Gandhi Gram	South	Latitude-30.321247 Longitude-78.018681
28	Tyagi Road Madrasi Colony (UJS)	South	Latitude-30.309768 Longitude-78.035009
29	Model Colony	South	Latitude-30.306848 Longitude-78.05064
30	Jaj Colony	South	Latitude-30.306018 Longitude-78.060646
31	Sanjay Colony	South	Latitude-30.30339 Longitude-78.06233
32	Sanjay Colony Mohini Road	South	Latitude-30.306389 Longitude-78.064161
33	Rifle Home	South	Latitude-30.309576 Longitude-78.06534
34	Sanjay Colony (Inder Road)	South	Latitude-30.301496 Longitude-78.061002
35	Inder Road	South	Latitude-30.308798 Longitude-78.064532
36	Carzan Road	South	Latitude-30.31866 Longitude-78.055859

37	Municipal Road (UJS)	South	Latitude-30.320609 Longitude-78.050844
38	Mahila ITI	South	Latitude-30.323681 Longitude-78.051162
39	Survey Chowk	South	Latitude-30.324351 Longitude-78.049934
40	Kanak	South	Latitude-30.326803 Longitude-78.047601
41	Gandhi Park	South	Latitude-30.326405 Longitude-78.044965
42	Pritam Road (UJS)	South	Latitude-30.310795 Longitude-78.056603
43	DAV	South	Latitude-30.328701 Longitude-78.056386
44	Karanpur Chowk	South	Latitude-30.328423 Longitude-78.056906
45	Cement Road	South	Latitude-30.333077 Longitude-78.061389
46	Dobhalwala	South	Latitude-30.335832 Longitude-78.02375
47	Badrinath Colony	South	Latitude-30.335167 Longitude-78.039378
48	Neelkanth Vihar	South	Latitude-30.34151 Longitude-78.041667
49	Chaku wala Near Shikandi Place (UJS)	South	Latitude-30.335275 Longitude-78.039394
50	Indra Colony New Shikar Sandesh (UJS)	South	Latitude-30.334307 Longitude-78.338173
51	Indra Colony	South	Latitude-30.335111 Longitude-78.03565
52	Nagar Palika	South	Latitude-30.32026 Longitude-78.043528
53	Parade ground	South	Latitude-30.323581 Longitude-78.046473
54	Tibbeti Market	South	Latitude-30.233795 Longitude-78.044739
55	Chaku wala behind Head Post Office (UJS)	South	Latitude-30.325525 Longitude-78.041723
56	Tagore Villa	South	Latitude-30.329577 Longitude-78.034741
57	Aheer Mandi	South	Latitude-30.337708 Longitude-78.047065
58	Sallawala	South	Latitude-30.341031 Longitude-78.056627
59	Purani Jail Parishar	South	Latitude-30.313673 Longitude-78.039259
60	Race Course Mini	South	Latitude-30.305602 Longitude-78.043986
61	Dharampur Dispensary (UJS)	South	Latitude-30.301448 Longitude-78.04926
62	Chandra singh Garhwali Marg	South	Latitude-30.29866 Longitude-78.049617
63	Race Course New	South	Latitude-30.301385 Longitude-78.048693
64	Tyagi Road MDDA Park (UJS)	South	Latitude-30.302499 Longitude-78.036627
65	Kusum Vihar (UJS)	South	Latitude-30.303147 Longitude-78.035091
66	Retha Mandi Muslim Colony	South	Latitude-30.305302 Longitude-78.03281
67	Bandron wali Gali	South	Latitude-30.315304 Longitude-78.03419
68	Singhal Mandi	South	Latitude-30.307675 Longitude-78.033273
69	Dehrakhas Surkanda Mandir (UJS)	South	Latitude-30.298991 Longitude-78.024718
70	Vidhya Vihar Phase 2	South	Latitude-30.297706 Longitude-78.205515
71	Rameshwar Mohalla	South	Latitude-30.320247 Longitude-78.031809
72	Garhwaal Sabha	South	Latitude-30.333774 Longitude-78.035413
73	Hathibarkala Mini	South	Latitude-30.344762 Longitude-78.051758
74	Hathibarkala	South	Latitude-30.339713 Longitude-78.053603
75	Vijay Colony New	South	Latitude-30.347591 Longitude-78.0441
76	Vijay Colony Old	South	Latitude-30.347078 Longitude-78.04654
77	Vijay Colony Quara	South	Latitude-30.347078 Longitude-78.04654

78	Green Valley	South	Latitude-30.335999 Longitude-78.048258
79	Rajpur Road GGIC	South	Latitude-30.33217 Longitude-78.0559
80	New Gandhi Gram	South	Latitude-30.316189 Longitude-78.016620
81	Madho Ram Quarter (UJS)	South	Latitude-30. Longitude-78.
82	Rekha Srivastava	South	Latitude-30.317238 Longitude-78.024052
83	Adarsh Vihar	South	
84	MDDA Dalanwala	North	Latitude-30.313589 Longitude-78.063158
85	Chestrawas Adoiwala	North	Latitude-30.312985 Longitude-78.065021
86	Vani Vihar	North	Latitude-30.316649 Longitude-78.068243
87	Sahestradhara Crossing	North	Latitude-30.32462 Longitude-78.64199
88	Kana Kunj	North	Latitude-30.327141 Longitude-78.06282
89	Ekta Vihar	North	Latitude-30.537675 Longitude-78.069267
90	Badrish Colony	North	Latitude-30.307173 Longitude-78.07055
91	Nanur Khera	North	Latitude-30.331178 Longitude-78.078471
92	Adoiwala Shakti Vihar	North	Latitude-30.325729 Longitude-78.061327
93	DL Road	North	Latitude-30.337229 Longitude-78.064168
94	Adoiwala Saraswati Vihar (Mini Tubewell)	North	Latitude-30.319324 Longitude-78.064321
95	Sirmour	North	Latitude-30.339071 Longitude-78.025117
96	Krishna Nagar	North	Latitude-30.337169 Longitude-78.025917
97	LoharWala	North	Latitude-30.340661 Longitude-78.025425
98	Rajni Kunj	North	Latitude-30.333652 Longitude-78.022571
99	Rajendra nagar 3	North	Latitude-30.334742 Longitude-78.019004
100	Rajender Nagar 4	North	Latitude-30.342161 Longitude-78.024773
101	Rajender Nagar 8 (New) (ADB)	North	Latitude-30.343057 Longitude-78.023713
102	Nachghar (Rajendra Nagar-2)	North	Latitude-30.338222 Longitude-78.01851
103	Rajender Nagar 8 (Old) (UJS)	North	Latitude-30.343057 Longitude-78.023713
104	Kaulaghar Chungi	North	Latitude-30.347078 Longitude-78.04654
105	Kaulaghar OHT	North	Latitude-30.345965 Longitude-78.019623
106	SitaRam Mandir	North	Latitude-30.350051 Longitude-78.016633
107	Nimbuwala Kaulagarh	North	Latitude-30.350486 Longitude-78.014704
108	Kaulaghar ADB	North	Latitude-30.351425 Longitude-78.003662
109	Kaulaghar Chuna Bhatta	North	Latitude-30.351425 Longitude-78.003662
110	Prempur Mafi Ankit Vihar	North	Latitude-30.35286 Longitude-78.005512
111	Bajawala (UJS)	North	Latitude-30.37658 Longitude-78.028253
112	Musandawala	North	Latitude-30.348697 Longitude-77.981895
113	DurgaVihar	North	Latitude-30.335993 Longitude-78.010955
114	Vanasthali Bhawan	North	Latitude-30.335993 Longitude-78.010797
115	GMS Road	North	Latitude-30.330711 Longitude-78.011211
116	Mall Road mini Tubewell	North	Latitude-30.32955 Longitude-78.031929
117	VijayPark 2	North	Latitude-30.333108 Longitude-78.016087
118	VijayPark1	North	Latitude-30.334102 Longitude-78.016608
119	HariVihar ADB	North	Latitude-30.330315 Longitude-78.015032

120	Akashdeep Mini	North	Latitude-30.332743 Longitude-78.021067
121	Mitrlok Colony	North	Latitude-30.332743 Longitude-78.024519
122	Yamuna Colony 1	North	Latitude-30.328683 Longitude-78.021884
123	Idgah Tubewell	North	Latitude-30.328724 Longitude-78.028399
124	Yamuna Colony 2	North	Latitude-30.326008 Longitude-78.027704
125	Sriram Puram	North	Latitude-30.32351 Longitude-78.015684
126	ShantiVihar	North	Latitude-30.327729 Longitude-78.021469
127	Govindgarh	North	Latitude-30.325368 Longitude-78.025842
128	Jodi Jakhan (Himalayan Garden)	North	Latitude-30.3684 Longitude-78.0681
129	Jodi Gaon	North	Latitude-30.3780 Longitude-78.0662
130	Sinola	North	Latitude-30.334102 Longitude-78.016608
131	Bhramawala -2	North	Latitude-30.3474 Longitude-78.751
132	Mandakni Vihar (Park)	North	Latitude-30.3473 Longitude-78.0722
133	Chidowali Nagar Nigam (UJS)	North	Latitude-30.3482 Longitude-78.0687
134	Aman Vihar Jal Nigam	North	Latitude-30.3557 Longitude-78.0726
135	Chidowali	North	Latitude-30.354387 Longitude-78.074811
136	Bhramawala Khala-1	North	Latitude-30.3418 Longitude-78.0694
137	Manglowala (UJS)	North	Latitude-30.333461 Longitude-78.085443
138	Dasmesh Vihar	North	Latitude-30.3230 Longitude-78.0709
139	Adoiwala Shiv Lok	North	Latitude-30.3196 Longitude-78.0710
140	Azad Nagar	North	Latitude-30.3240 Longitude-78.0627
141	Chuna Bhatta-1 OHT	North	Latitude-30.320527 Longitude-78.061464
142	Bhagirthipuram	North	Latitude-30.359692 Longitude-78.061392
143	Vivek Vihar-2	North	Latitude-30.357606 Longitude-78.058242
144	Rajeev Nagar Danda	North	Latitude-30.304475 Longitude-78.069343
145	Saraswati Vihar	North	Latitude-30.320419 Longitude-78.063086
146	Hill View Colony	Pithuwala	Latitude-30.3213 Longitude-78.0078
147	Indra Nagar-2	Pithuwala	Latitude-30.3226 Longitude-78.0015
148	Indra Nagar -1	Pithuwala	Latitude-30.3237 Longitude-78.0055
149	Indra Nagar-4	Pithuwala	Latitude-30.317812 Longitude-78.003874
150	Indra Nagar-3	Pithuwala	Latitude-30.3203 Longitude-77.995802
151	Vasant Vihar Phase-2	Pithuwala	Latitude-30.323646 Longitude-77.995802
152	Vasant Vihar Phase-1 mini	Pithuwala	Latitude-30.3267 Longitude-77.0001
153	Vasant Vihar -1	Pithuwala	Latitude-30.3327 Longitude-77.9978
154	Vasant Vihar-2	Pithuwala	Latitude-30.3323 Longitude-78.9999
155	Pandit wari	Pithuwala	Latitude-30.3323 Longitude-78.9877
156	Green Park Mini Ballupur Chowk	Pithuwala	Latitude-30.3326 Longitude-78.0100
157	Maharani Bagh	Pithuwala	Latitude-30.3317 Longitude-78.0104
158	Ashirwad Enclave mini	Pithuwala	Latitude-30.3315 Longitude-78.0104
159	GMS Road kanwali	Pithuwala	Latitude-30.3161 Longitude-78.0106
160	Vyomprasat mini	Pithuwala	Latitude-30.3155 Longitude-78.0078
161	Kawali Gaon	Pithuwala	Latitude-30.3119 Longitude-78.0071
162	Engineers Enclave	Pithuwala	Latitude-30.3099 Longitude-78.0050
163	Bengali Ajabpur Kothi	Pithuwala	Latitude-30.2839 Longitude-78.0391
164	THDC Ajabpur	Pithuwala	Latitude-30.2826 Longitude-78.0482

165	Deep Nagar-1	Pithuwala	Latitude-30.285577 Longitude-78.049954
166	Deep Nagar-2	Pithuwala	Latitude-30.2782 Longitude-78.0443
167	Lower Kargi (UJS)	Pithuwala	Latitude-30.2864 Longitude-78.0203
168	Upper Kargi (UJS)	Pithuwala	Latitude-30.2910 Longitude-78.0182
169	Vidya Vihar Kargi Mini	Pithuwala	Latitude-30.2946 Longitude-78.0244
170	Milan Vihar-1	Pithuwala	Latitude-30.3097 Longitude-78.0136
171	Ashok Vihar Park	Pithuwala	Latitude-30.3052 Longitude-78.0129
172	Indrapuram	Pithuwala	Latitude-30.3081 Longitude-78.0088
173	Niranjanpur ITI	Pithuwala	Latitude-30.2990 Longitude-78.0053
174	Lower Majra-1	Pithuwala	Latitude-30.2857 Longitude-78.9995
175	Lower Majra-2	Pithuwala	Latitude-30.2751 Longitude-78.0008
176	Subhash Nagar	Pithuwala	Latitude-30.2754 Longitude-78.9886
177	Mathorawala Vihar	Pithuwala	Latitude-30.266763 Longitude-78.033173
178	Shanti Vihar mini (UJS)	Pithuwala	Latitude-30.28618 Longitude-78.042801
179	Shakti Vihar Majra	Pithuwala	Latitude-30.295758 Longitude-78.007495
180	Ambiwala	Raipur	Latitude-30.298349 Longitude-78.068522
181	Saraswati Vihar Zone	Raipur	Latitude-30.292174 Longitude-78.039797
182	Mata Mandir Ajabpur	Raipur	Latitude-30.298573 Longitude-78.03291
183	Railway Crossing Ganesh Vihar	Raipur	Latitude-30.297563 Longitude-78.039561
184	Saraswati Vihar E Block	Raipur	Latitude-30.29035 Longitude-78.032331
185	Ashok Vihar Shiv Mandir	Raipur	Latitude-30.29315 Longitude-78.049423
186	Dinasaur Park (UJS)	Raipur	Latitude-30.295014 Longitude-78.045438
187	Respanapul	Raipur	Latitude-30.296563 Longitude-78.055665
188	Saraswati Vihar-B (UJS)	Raipur	Latitude-30.2923 Longitude-78.0397
189	Vishnu Lok Colony	Raipur	Latitude-30.2934 Longitude-78.0533
190	Kedarpuram MDDA	Raipur	Latitude-30.2792 Longitude-78.0473
191	Kedarpuram Colony	Raipur	Latitude-30.2732 Longitude-78.0400
192	Defence Colony, Gorakhpur	Raipur	Latitude-30.284203 Longitude-78.056349
193	Vidhan Sabha in Front	Raipur	Latitude-30.2918 Longitude-78.0570
194	Ambiwala Gurudwara	Raipur	Latitude-30.2982 Longitude-78.0684
195	Rajiv Nagar	Raipur	Latitude-30.298394 Longitude-78.060769
196	Divya Vihar Colony	Raipur	Latitude-30.2930 Longitude-78.0671
197	Jagriti Vihar (Shiv Negi House)	Raipur	Latitude-30.2858 Longitude-78.0660
198	Vidhan Sabha Parisar (UJS)	Raipur	Latitude-30.292340 Longitude-78.055844

Site Survey Details of OHT (Under: Uttrakhand Jal Sansthan)

S. N0.	OHT	Division	Co ordinates
1	Matawala Bagh OHT	South	Latitude-30.312903 Longitude-78.024712
2	Dherakhas	South	Latitude-30.300747 Longitude-78.024354
3	Pathri Bagh	South	Latitude-30.307395 Longitude-78.022214
4	Matawala Bagh New	South	Latitude-30.316999 Longitude-78.022885
5	Bannu School	South	Latitude-30.306783 Longitude-78.042141

6	Nehru Colony I Block	South	Latitude-30.302678 Longitude-78.055168
7	Nehru Colony H Block	South	Latitude-30.299411 Longitude-78.059702
8	Nehru Colony 3	South	Latitude-30.30114 Longitude-78.05474
9	Indresh Nagar	South	Latitude-30.311852 Longitude-78.03842
10	Tehsil Park	South	Latitude-30.321362 Longitude-78.040308
11	Tagore Villa Ansari Marg	South	Latitude-30.32578 Longitude-78.0337782
12	Khurbura City Board	South	Latitude-30.33598 Longitude-78.04923
13	Jhanda Bazar	South	Latitude-30.317334 Longitude-78.031661
14	Sanjay Colony	South	Latitude-30.303751 Longitude-78.062746
15	Inder Road	South	Latitude-30.301496 Longitude-78.061092
16	Mahila ITI	South	Latitude-30.32368 Longitude-78.051162
17	Survey Chowk	South	Latitude-30.324352 Longitude-78.049934
18	Survey Chowk 2	South	Latitude-30.324609 Longitude-78.049523
19	Cement Road	South	Latitude-30.333077 Longitude-78.056906
20	Dobhalwala	South	Latitude-30.335832 Longitude-78.042375
21	Nagar Palika	South	Latitude-30.319486 Longitude-78.043023
22	Purani Jail Parishad	South	Latitude-30.313673 Longitude-78.039259
23	Rajpur Road GGIC	South	Latitude-30.33217 Longitude-78.0559
24	MDDA Dalanwala	North	Latitude-30.313589 Longitude-78.063158
25	Vani Vihar	North	Latitude-30.316699 Longitude-78.068243
26	Kanan Kunj	North	Latitude-30.327141 Longitude-78.060282
27	Bhramawala SGRR	North	Latitude-30.344401 Longitude-78.072972
28	Rajeev Nagar Danda North	North	Latitude-30.304475 Longitude-78.069343
29	Chuna Bhatta North	North	Latitude-30.320601 Longitude-78.061454
30	DL Road	North	Latitude-30.331229 Longitude-78.064168
31	Nanur Khera	North	Latitude-30.331178 Longitude-78.078471
32	Adoiwala Shakti vihar Shanti	North	Latitude-30.325729 Longitude-78.061327
33	Rajendra Nagar-8	North	Latitude-30.343057 Longitude-78.073713
34	Kulaghar OHT	North	Latitude-30.345965 Longitude-78.019623
35	Sitaram Mandir	North	Latitude-30.350051 Longitude-78.016633
36	Nimbuwala	North	30.350486
37	Bhramawala-2	North	Latitude-30.3474 Longitude-78.0751
38	Chidowali Nagar Nigam	North	Latitude-30.3487 Longitude-78.0710
39	Chidowali	North	Latitude-30.3354387 Longitude-78.074811
40	Chidowali-2/CWR	North	Latitude-30.354387 Longitude-78.074811
41	Adhoiwla Shivlok	North	Latitude-30.3196 Longitude-78.0710
42	**Chuna Bhatta-1**	North	Latitude-30.320527 Longitude-78.061464
43	Hari Vihar	North	Latitude-30.330315 Longitude-78.0015032
44	**Yamuna colony only one tank**	North	Latitude-30.328683 Longitude-78.021883
45	Badrish Colony	North	Latitude-30.307173 Longitude-78.07055
46	Ambiwala Gurudwara Raipur	Raipur	Latitude-30.298349 Longitude-78.068522
47	Saraswati ViharB	Raipur	Latitude-30.292174 Longitude-78.039727

	Block		
48	Mata Mandir	Raipur	Latitude-30.298578 Longitude-78.042637
49	Ashok Vihar (Shiv Mandir)	Raipur	Latitude-30.29315 Longitude-78.49423
50	Vijay Park 1	North	Latitude-30.334102 Longitude-78.016608
51	Indara Nagar-2	Pithuwala	Latitude-30.3326 Longitude-78.0015
52	Indara Nagar-1	Pithuwala	Latitude-30.3237 Longitude-78.0055
53	Indara Nagar -4	Pithuwala	Latitude-30.317812 Longitude-78.003874
54	Vasant Vihar Phase-2	Pithuwala	Latitude-30.32366 Longitude-77.995802
55	Vasant Vihar -1	Pithuwala	Latitude-30.3327 Longitude-77.9978
56	Pandit wari	Pithuwala	Latitude-30.3323 Longitude-77.9877
57	Maharani Bagh	Pithuwala	Latitude-30.3317 Longitude-78.0104
58	GMS Road Kanwali	Pithuwala	Latitude-30.3161 Longitude-78.0106
59	Kanwali Gaon	Pithuwala	Latitude-30.3119 Longitude-78.0071
60	Engineers Enclave	Pithuwala	Latitude-30.3099 Longitude-78.0050
61	Bengali Kothi Ajabpur	Pithuwala	Latitude-30.2839 Longitude-78.0391
62	THDC Ajabpur	Pithuwala	Latitude-30.2826 Longitude-78.0462
63	Deep Nagar	Pithuwala	Latitude-30.28557 Longitude-78.049954
64	Indrapuram	Pithuwala	Latitude-30.3081 Longitude-78.0088
65	Niranjanpur ITI	Pithuwala	Latitude-30.2990 Longitude-78.0053
66	Lower Majra	Pithuwala	Latitude-30.2857 Longitude-78.9995
67	Saraswati Vihar-B	Raipur	Latitude-30.2923 Longitude-78.0397
68	MDDA Kedarpuram	Raipur	Latitude-30.2792 Longitude-78.0473
69	MDDA Colony	Raipur	Latitude-30.2732 Longitude-78.0450
70	Defence Colony	Raipur	Latitude-30.284203 Longitude-78.5649
71	Ambiwala Gurudwara	Raipur	Latitude-30.2982 Longitude-78.0684
72	Rajiv Nagar	Raipur	Latitude-30.298394 Longitude-78.060769