OFFICE OF THE EXECUTIVE ENGINEER (PROJECT) W-I
DELHI JAL BOARD; GOVT. OF NCT OF DELHI
VARUNALAYA PHASE-I, JHANDEWALAN, NEW DELHI-110055.

No. DJB/EE(Proj.)W-I/2018/1754 **Dated:-31-07-2018**

N.I.T No. 03 (2018-19)

On behalf of DJB, EE (Project) W-I, invites Request for Proposal (RFP), offline/online lump sum rates bids for the following work, from empanelled firms shortlisted by MoUD either individually as a bidder or as a joint venture firms, in the prescribed bid documents under 2 bid system i.e. technical bid and financial bid.

Date of Pre-bid meeting	**10.08.2018 at 15:00 Hrs.**
Last date of Offline/Online Submission of Bids	**10.09.2018 at 15:00 Hrs.**
Opening of Technical Bid	**10.09.2018 at 15:10 Hrs.**

Name of Work	Estimated Cost	Earnest Money	Tender fee	Completion period
"Hiring of consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMAs, in phase-I in water supply network of DJB and its O&M for 2 years".	NA	5,000,00/-	1500/-	42 months

RFP documents may be downloaded from DJB website www.delhijalboard.nic.in

Note:

1. Validity of Tender is 120 days from the date of Submission of Tender.
2. Originals of Technical bid & Financial bid are to be submitted on the day of submission only.
3. All corrigendum, addenda, amendments, pre bid reply, time extension, if any to the above notifications/RFP shall be intimated to the agencies through DJB website www.delhijalboard.nic.in .

-Sd-
EE (Project) W-I

Copy to:-

1. Vice Chairman, DJB-for kind information pl.
2. Secy to CEO / Mem.(A) / Mem.(F) / Mem.(WS) / Mem.(Dr.) /Addl. CEO / CVO. for kind information.
3. C.E.(Projects)W/East/Central/South/West/Planning
4. Under Secretary (Smart Cities Division), MoUD, Govt. of India.
5. Dir. (F&A)/S.E (Project) W-I/II/(P)W
6. Jt. Director F&A,I-II,/ AO (Proj.)/AAO. (Proj).
7. PR(Consultant)

EE (Project) W-I

Delhi Jal Board

REQUEST FOR PROPOSAL

RFP No. : 03 (2018-19)

Client: Delhi Jal Board, New Delhi.

Country: INDIA

Project Name: **Hiring of consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMA in phase-I in water supply network of DJB" and its O&M for 2 years**

Name of Assignment: Selection of Consulting Services for Assessment of Non-Revenue Water and Developing Strategy and Implementation Action Plan for reduction of Non-Revenue Water, including two years O&M, in Delhi Jal Board, DelhI

Issued on: 30th July, 2018

TABLE OF SECTIONS

Section 1. Letter of Invitation

Dear Mr. /Ms.:

1. The DJB (hereinafter called "client") intends to hire consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMAs, in phase-I in water supply network of DJB and its O&M for 2 years, from its own funds and issues this Request For Proposal (RFP)
2. On behalf of Delhi Jal Board, Online lump sum rate bids are invited, from eligible consulting firms empanelled by the MoUD in July 2016 vide Expression of Interest invited by MoUD for reduction of NRW to provide technical assistance to assess Non-Revenue Water (NRW) and develop strategies and implementation plans, for reduction of Non-Revenue Water (NRW) for the work of "Hiring of consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMAs, in phase-I in water supply network of DJB and its O&M for 2 years", either individually as a bidder or a joint venture firm in the prescribed bid documents under two bid system i.e. technically bid and financial bid. More details on the RFP bid document are provided hence forth in this RFP
3. This Request for Proposals (RFP) has been addressed to the following firms:

i.	**ADCC Infocad Limited** Vice President-Operations, Plot No. 10/5, IT Park, Opp. VNIT, Nagpur-440022, M.No. 9923755685 E-mail ID: rahul@adccinfocad.com
ii.	**DRA Consultants Private Limited** Sr. Executive-Business Development, 58, Ingole Nagar, Opp. Airport, Behind Hotel Pride, Wardha Road, Nagpur-440005 M.No. 9730122800 E-mail ID: jatindrathi@gmail.com
iii.	**Feedback Infra Private Limited** in joint Venture with **Waternet Consulting**

	Services Private Limited Sr. Vice-President, Realty & Social Infrastructure Division, 15th Floor, Tower 9B, DLF Cyber City, Phase-III, Gurgaon-122002, Haryana. M.No. 9811132080 E-mail ID: rakesh.bansal@feedbackinfra.com
iv.	**Mott MacDonald Private Limited** A-20, Sector-2, Noida, Uttar Pradesh-201301 M.No. 8826997592 E-mail ID: sushma.chaudhary@mottmac.com
v.	**NCPE Infrastructure India Private Limited** Managing Director, 12-2-826/A/12, LIC Colony, Mehidipatnam, Hyderabad-500028 M.No. 9848035377, 9849035377 E-mail ID: info@ncpe.org.in, ncpesms@yahoo.com
vi.	**NJS Consultants Company Limited** in joint Venture with **NJS Engineers India Private Limited** and **ICRA Management Consulting Services Limited** Director-India Operation, 316/274, Ground Floor, Saidulajab, Western Marg, Garden of Five Senses Road, New Delhi-110017, M.No. 9397306163 E-mail ID: uday@njsei.com
vii.	**Pricewaterhousecooper Private Limited** in joint Venture with **Jalakam Solutions Private Limited.** Pricewaterhousecooper Private Limited Floor-17, Building-10C, DLF Cyber City, Gurgaon-122002, Haryana. M.No. 9884001667 E-mail ID: sarasa.kumar@in.pwc.com

viii.	**Shah Technical Consultants Private Limited.** Director, 407, Raheja Centre, Nariman Point, Mumbai-400021 M.No. 9821079564 E-mail ID: prasanashah@stc.co.in
ix.	**SMEC International Pvt. Ltd** in joint Venture with **SMEC (India) Pvt. Ltd** Managing Director, 387, Udyog Vihar, Phase-II, Gurgaon-122016 Haryana. M.No. 9810084664 E-mail ID: hasan.kazmi@smec.com
x.	**Tandon Urban Solutions Private Limited** General Manager, Business Development, 701, Harbhaajan Building, CST Road, Kalina, Santacruz(E), Mumbai-400098 M.No. 9867687797 E-mail ID: tandonandassociates@gmail.com
xi.	**Tata Consulting Engineers Limited** Managing Director, 247 Park, Tower A, 4th Floor, LBS Marg, Vikhroli (W), Mumbai-400083 M.No. 9892732234 E-mail ID: svdeshpande@tce.co.in
xii.	**WAPCOS Limited** Dy. Chief Engineer, Plot No. 76C, Institutional Area, Sector-18, Gurgaon, Haryana-122015 Tel.No. 91-124-2397391 E-mail ID: apparant@wapcos.gov.in

4. It is not permissible to transfer this invitation to any other firm.
5. A firm will be selected under Least Cost (L1) method and in a Proposal format as described in this RFP, in accordance with the policies of the Delhi Jal Board.

6. The RFP includes the following documents:

   Section 1 - Letter of Invitation

   Section 2 - Instructions to Consultants (ITC) and Data Sheet

   Section 3 - Technical Proposal - Standard Forms

   Section 4 - Financial Proposal - Standard Forms

   Section 5 – Eligible Countries

   Section 6 – DJB's Policy – Corrupt and Fraudulent Practices

   Section 7 - Terms of Reference

   Section 8 - Standard Forms of Contract (Time Based)

   Section 9 – Terms of payment

   Section 10- Details to be shared by DJB

   Annexure – I and Annexure –II

7. Please inform us by *4th August, 2018, offline or* in writing by E-mail to *dmacelldjb@gmail.com*:

   (a) that you have received the Letter of Invitation; and

   (b) Whether you intend to submit your proposal in Joint Venture

Yours sincerely,

EE(Project)W-I

SECTION 2. Instructions to Consultants (ITC) and Data Sheet

A. General Provisions

1. Definitions	(a) "Affiliate(s)" means an individual or an entity that directly or indirectly controls, is controlled by, or is under common control with the Consultant. (b) "Applicable Guidelines" means Contract award process as set forth in this RFP, latest CPWD manual, CVC guidelines. (c) "Applicable Law" means the laws and any other instruments having the force of law in the Delhi City, NCT of Delhi, India i.e. within the jurisdiction of Hon'ble High Court of Delhi (d) NIL (e) NIL (f) NIL (g) "Client" means the implementing agency that signs the Contract for the Services with the selected Consultant i.e. client is Delhi Jal Board, Govt. of NCT of Delhi. (h) "Consultant" means a legally-established professional consulting firm or an entity that may provide or provides the Services to the Client under the Contract. (i) "Contract" means a legally binding written agreement signed between the Client and the Consultant and includes all the attached documents listed in its General Conditions of Contract (GCC) (j) "Data Sheet" means an integral part of the Instructions to Consultants (ITC) Section 2 that is used to reflect specific assignment conditions to supplement, but not to over-write, the

provisions of the ITC.

(k) "Day" means a calendar day.

(l) "Experts" means, collectively, Key Experts, Non-Key Experts, or any other personnel of the Consultant, Sub-consultant or Joint Venture member(s) engaged for any activity e.g. hydraulic modelling, leak detection and survey etc.

(m) "Government" means Government of Delhi

(n) "Joint Venture (JV)" means an association with or without a legal personality distinct from that of its members, of more than one Consultant where one member has the authority to conduct all business for and on behalf of any and all the members of the JV, and where the members of the JV are jointly and severally liable to the Client for the performance of the Contract.

(o) "Key Expert(s)" means an individual professional whose skills, qualifications, knowledge and experience are critical to the performance of the Services under the Contract and whose CV is taken into account in the technical evaluation of the Consultant's proposal.

(p) "ITC" (this Section 2 of the RFP) mean the Instructions to Consultants that provides the eligible empanelled/shortlisted Consultants with all information needed to prepare their Proposals.

(q) "LOI" (this Section 1 of the RFP) means the Letter of Invitation being sent by the Client to the eligible empanelled/shortlisted Consultants.

(r) "MoUD" means Ministry of Urban Development

(s) "Non-Key Expert(s)" means an individual professional

	provided by the Consultant or its Sub-consultant and who is assigned to perform the Services or any part thereof under the Contract and whose CVs are not evaluated individually, (t) "Proposal" means the Technical Proposal and the Financial Proposal of the Consultant. (u) "RFP" means the Request for Proposal to be prepared by the Client for the selection of Consultants, based on the SRFP. (v) "SRFP" means the Standard Request for Proposal, which must be used by the Client as the basis for the preparation of the RFP. (w) "Services" means the work to be performed by the Consultant pursuant to the Contract. (x) "Sub-consultant" means an entity to whom the Consultant intends to subcontract any part of the Services while remaining responsible to the whole project of the Client during the performance of the Contract. (y) "TOR" (this Section 7 of the RFP) means the Terms of Reference that explain the objectives, scope of work, activities, and tasks to be performed, respective responsibilities of the Client and the Consultant, and expected results and deliverables of the assignment.
2. Introduction	**2.1** The Client named in the **Data Sheet** intends to select a Consultant from those listed in the Letter of Invitation, in accordance with the method of selection specified in the **Data Sheet**. **2.2** The eligible empanelled Consultants are invited to submit a Technical Proposal and a Financial Proposal, or a Technical Proposal only, as specified in the **Data Sheet**, for consulting services required for the assignment named in the **Data Sheet**. The Proposal will be the basis

	for selecting and ultimately signing the Contract with the selected Consultant. **2.3** The Consultants should familiarize themselves with the local conditions and take them into account in preparing their Proposals, including attending a pre-proposal conference/pre-bid meeting if one is specified in the **Data Sheet**. Attending any such pre-proposal conference is optional and is at the Consultants' expense. **2.4** The Client will timely provide, at no cost to the Consultants, the inputs, relevant project data, and reports required for the preparation of the Consultant's Proposal as specified in the **Data Sheet** and section 10
3. Conflict of Interest	**3.1** The Consultant is required to provide professional, objective, and impartial advice, at all times holding the Client's interests paramount, strictly avoiding conflicts with other assignments or its own corporate interests, and acting without any consideration for future work. **3.2** The Consultant has an obligation to disclose to the Client any situation of actual or potential conflict that impacts its capacity to serve the best interest of its Client. Failure to disclose such situations may lead to the disqualification of the Consultant or the termination of its Contract and/or debarring from works in DJB **3.2.1** Without limitation on the generality of the foregoing, the Consultant shall not be hired under the circumstances set forth below:
a. Conflicting activities	(i) <u>Conflict between consulting activities and procurement of instruments/technologies/equipment by the agency to complete the work assigned, or non-consulting services:</u> a firm that has been engaged by the Client to arrange instruments/technologies/equipment to complete the work assigned, or non-consulting services for a project, or any of its Affiliates, shall be disqualified from providing consulting

		services resulting from or directly related to those instruments/technologies/equipment to complete the work assigned, or non-consulting services. Conversely, a firm hired to provide consulting services for the preparation or implementation of a project, or any of its Affiliates, shall be disqualified from subsequently providing goods or works or non-consulting services resulting from or directly related to the consulting services for such preparation or implementation.
b. Conflicting assignments	(ii)	Conflict among consulting assignments: a Consultant (including its Experts and Sub-consultants) or any of its Affiliates shall not be hired for any assignment that, by its nature, may be in conflict with another assignment of the Consultant for the same or for another Client.
c. Conflicting relationships	(iii)	Relationship with the Client's staff: a Consultant (including its Experts and Sub-consultants) that has a close business or family relationship with a professional staff of the Client (or of implementing agency), who are directly or indirectly involved in any part of (i) the preparation of the Terms of Reference for the assignment, (ii) the selection process for the Contract, or (iii) the supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to DJB throughout the selection process and the execution of the Contract.
4. Unfair Competitive Advantage	**4.1**	Fairness and transparency in the selection process require that the Consultants or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to the assignment in question. To that end, the Client shall indicate in the **Data Sheet** and make available to all shortlisted

	Consultants together with this RFP all information that would in that respect give such Consultant any unfair competitive advantage over competing Consultants.
5. Corrupt and Fraudulent Practices	**5.1** DJB requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section 6. **5.2** In further pursuance of this policy, Consultant shall permit and shall cause its agents, Experts, Sub-consultants, sub-agencys, services providers, or suppliers to permit the DJB to inspect all accounts, records, and other documents relating to the submission of the Proposal and contract performance (in case of an award), and to have them audited by auditors appointed by the DJB.
6. Eligibility	**6.1** DJB permits consultants (individuals and firms, including Joint Ventures and their individual members) only from eligible empanelled firms by MoUD to offer consulting services for DJB-financed projects as these firms as already been shortlisted by the MoUD after calling the EOI in July, 2016. Furthermore, it is the Consultant's responsibility to ensure that its Experts, joint venture members, Sub-consultants, agents (declared or not), sub-agencys, service providers, suppliers and/or their employees meet the eligibility requirements as established by the DJB in the Applicable Guidelines. **6.2** As an exception to the foregoing Clauses 6.1 and 6.2 above:
a. Sanctions	**6.2.1** A firm or an individual debarred/blacklisted by the DJB or any government agency in accordance with the above Clause 5.1 or in accordance with "Anti-Corruption Guidelines" shall be ineligible to be awarded a DJB contract, or to benefit from a DJB contract, financially or otherwise, during such period of time as the DJB shall determine.
b. Prohibitions	**6.2.2** Firms and individuals of a country or goods manufactured in a country may be ineligible if so indicated in Section 5 (Eligible

	Countries) and: a) as a matter of law or official regulations, the Client's country prohibits apparent relations with that country, provided that the DJB is satisfied that such exclusion does not preclude effective competition for the provision of Services required; or b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Client's Country prohibits any import of goods from that country or any payments to any country, person, or entity in that country.
c. Restrictions for Government-owned Enterprises	**6.3.3** Government-owned enterprises or institutions in the Client's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under apparant law, and (iii) that they are not dependent agencies of the Client To establish eligibility, the government-owned enterprise or institution should provide all relevant documents (including its charter) sufficient to demonstrate that it is a legal entity separate from the government; it does not currently receive any substantial subsidies or budget support; it is not obligated to pass on its surplus to the government; it can acquire rights and liabilities, borrow funds, and can be liable for repayment of debts and be declared bankrupt; and it is not competing for a contract to be awarded by the government department or agency which, under the applicable laws or regulations, is its reporting or supervisory authority or has the ability to exercise influence or control over it.
d. Restrictions for public employees	**6.3.4** Government officials and civil servants of the Client's country are not eligible to be included as Experts in the Consultant's Proposal unless such engagement does not conflict with any employment or other laws, regulations, or policies of the Client's country, and they

	(i) are on leave of absence without pay, or have resigned or retired; (ii) are not being hired by the same agency they were working for before going on leave of absence without pay, resigning, or retiring (in case of resignation or retirement, for a period of at least 1 (one) year, or the period established by statutory provisions applying to civil servants or government employees in the Client's country, whichever is longer. Experts who are employed by the government-owned universities, educational or research institutions are not eligible unless they have been full time employees of their institutions for a year or more prior to being included in Consultant's Proposal.; and (iii) their hiring would not create a conflict of interest.
B. Preparation of Proposals	
7. General Considerations	**7.1.** In preparing the Proposal, the Consultant is expected to examine the RFP in detail. Any deficiencies in providing the information requested in the RFP may result in rejection of the Proposal.
8. Cost of Preparation of Proposal	**8.1.** The Consultant shall bear all costs associated with the preparation and submission of its Proposal, and the Client shall not be responsible or liable for those costs, regardless of the conduct or outcome of the selection process. The Client is not bound to accept any proposal, and reserves the right to annul the selection process at any time prior to Contract award, without thereby incurring any liability to the Consultant.
9. Language	**9.1.** The Proposal, as well as all correspondence and documents relating to the Proposal exchanged between the Consultant and the Client, shall be written in English language
10. Documents Comprising the Proposal	**10.1** The Proposal shall comprise the documents and forms listed in the Data Sheet. **10.2** If specified in the **Data Sheet**, the Consultant shall include a

	statement of an undertaking of the Consultant to observe, in competing for and executing a contract, the Client city/country's laws against fraud and corruption (including bribery). **10.3** NIL
11. Only One Proposal	**11.1** The Consultant (including the individual members of any Joint Venture) shall submit only one Proposal, either in its own name or as part of a Joint Venture in another Proposal. If a Consultant, including any Joint Venture member, submits or participates in more than one proposal, all such proposals shall be disqualified and rejected. This does not, however, preclude a Sub-consultant, or the Consultant's staff from participating as Key Experts and Non-Key Experts in more than one Proposal when circumstances justify and if stated in the **Data Sheet**.
12. Proposal Validity	**12.1** **The Data Sheet** indicates the period during which the Consultant's Proposal must remain valid after the Proposal submission deadline. **12.2** During this period, the Consultant shall maintain its original Proposal without any change, including the availability of the Key Experts, the proposed rates and the total price. **12.3** If it is established that any Key Expert nominated in the Consultant's Proposal was not available at the time of Proposal submission or was included in the Proposal without his/her confirmation, such Proposal shall be disqualified and rejected for further evaluation, and may be subject to sanctions in accordance with Clause 5 of this ITC.
a. Extension of Validity Period	**12.4** The Client will make its best effort to complete the negotiations within the proposal's validity period. However, should the need arise, the Client may request, in writing, all Consultants who submitted Proposals prior to the submission deadline to extend the Proposals'

	validity. **12.5** If the Consultant agrees to extend the validity of its Proposal, it shall be done without any change in the original Proposal and with the confirmation of the availability of the Key Experts. **12.6** The Consultant has the right to refuse to extend the validity of its Proposal in which case such Proposal will not be further evaluated.
b. Substitution of Key Experts at Validity Extension	**12.7** If any of the Key Experts become unavailable for the extended validity period, the Consultant shall provide a written adequate justification and evidence satisfactory to the Client together with the substitution request. In such case, a replacement Key Expert shall have equal or better qualifications and experience than those of the originally proposed Key Expert. The technical evaluation, however, will remain to be based on the evaluation of the CV of the original Key Expert. **12.8** If the Consultant fails to provide a replacement Key Expert with equal or better qualifications, or if the provided reasons for the replacement or justification are unacceptable to the Client, such Proposal will be rejected.
c. Sub-Contracting	**12.9** The Consultant shall not subcontract the whole of the Services but can outsource the agencies for leak detection, detection of unauthorised consumption and elevation survey etc.
13. Clarification and Amendment of RFP	**13.1.** The Consultant may request a clarification of any part of the RFP during the period indicated in the **Data Sheet** before the Proposals' pre-bid meeting. Any request for clarification must be sent in writing, or by standard electronic means, to the Client's address indicated in the **Data Sheet**. The Client will respond in writing, or by way of issuing MOM after pre-bid meeting, and will send written copies of the response (including an explanation of the query, only if deemed appropriate by the client but without identifying its source) to all empanelled/shortlisted Consultants. Should the Client deem it

	necessary to amend the RFP as a result of a clarification, it shall do so following the procedure described below: **13.1.1.** At any time before the proposal submission deadline, the Client may amend the RFP by issuing an amendment in writing or by standard electronic means. The amendment shall be sent to all shortlisted Consultants and will be binding on them. The shortlisted Consultants shall acknowledge receipt of all amendments in writing. **13.1.2.** If the amendment is substantial, the Client may extend the proposal submission deadline to give the shortlisted Consultants reasonable time to take an amendment into account in their Proposals. **13.2.** The Consultant may submit a modified Proposal or a modification to any part of it at any time prior to the proposal submission deadline. No modifications to the Technical or Financial Proposal shall be accepted after the deadline.
14. Preparation of Proposals – Specific Considerations	**14.1.** While preparing the Proposal, the Consultant must give particular attention to the following: **14.1.1.** Consultant may submit its proposal, individually or in Joint Venture **14.1.2.** The Client may indicate in the **Data Sheet** the estimated Key Experts' time input (expressed in person-month) or the Client's estimated total cost of the assignment. The Proposal shall be based on the Consultant's own estimates for the work on man-month basis/activity-wise basis. **14.1.3.** If stated in the **Data Sheet**, the Consultant shall include in its Proposal at least the same time input (in the same unit as indicated in the **Data Sheet**) of Key Experts, failing which the Financial Proposal will be adjusted for the purpose of comparison of proposals and decision for award in accordance with the procedure in

	the **Data Sheet**. **14.1.4.** For assignments under the Fixed-Budget selection method, the estimated Key Experts' time input is not disclosed. Total available budget, with an indication whether it is inclusive or exclusive of taxes, is given in the **Data Sheet**, and the Financial Proposal shall not exceed this budget.
15. Technical Proposal Format and Content	**15.1.** The Technical Proposal shall not include any financial information. A Technical Proposal containing material financial information shall be declared non-responsive. **15.1.1** Consultant shall not propose alternative Key Experts. Only one CV shall be submitted for each Key Expert position. Failure to comply with this requirement will make the Proposal non-responsive. **15.2.** Depending on the nature of the assignment, the Consultant is required to submit a Full Technical Proposal (FTP), or a Simplified Technical Proposal (STP) as indicated in the **Data Sheet** and using the Standard Forms provided in Section 3 of the RFP.
16. Financial Proposal	**16.1.** The Financial Proposal shall be prepared using the Standard Forms provided in Section 4 of the RFP. It shall list all costs associated with the assignment, including (a) remuneration for Key Experts and Non-Key Experts, (b) reimbursable expenses indicated in the **Data Sheet**.
a. Price Adjustment	**16.2.** For assignments with a duration exceeding 18 months, a price adjustment provision for foreign and/or local inflation for remuneration rates applies if so stated in the **Data Sheet**.
b. Taxes	**16.3.** The Consultant and its Sub-consultants and Experts are responsible for meeting all tax liabilities arising out of the Contract unless stated otherwise in the **Data Sheet**. Information on taxes in the

	Client's country is provided in the **Data Sheet**.
c. Currency of Proposal	**16.4.** The Consultant may express the price for its Services in the currency or currencies as stated in the **Data Sheet**. If indicated in the **Data Sheet**, the portion of the price representing local cost shall be stated in the national currency.
d. Currency of Payment	**16.5.** Payment under the Contract shall be made in the currency or currencies in which the payment is requested in the Proposal.
C. Submission, Opening and Evaluation	
17. Submission, Sealing, and Marking of Proposals	**17.1** The mode submission of RFP shall be submitted offline (manually) only. Technical & Financial bids have to be submitted only in a sealed envelope in the office of EE(Proj.)W-I. **17.2** Those agencies which are registered with DJB/Delhi government, may download the RFP document from the website: http://govtprocurement.delhi.gov.in, and they have to submit their technical bid, complete Proposal comprising the documents and forms in accordance with Clause 10 & 17.4 (Documents Comprising Proposal), online, on or before the last date and time of submission of bids. **Not Applicable** **17.3** The agencies may obtain the RFP document from the office of EE(Project) Water-I w.e.f. 01.08.2018 to 07.08.2018 from 10.00 AM to 5.00 PM on the working days or also may download from Delhi Jal Board website www.delhijalboard.nic.in after depositing the requisite tender fees **17.4** An authorized representative of the Consultant shall sign the original submission letters in the required format for both the Technical Proposal and, if applicable, the Financial Proposal and shall initial all pages of both. The authorization shall be in the form

of a written power of attorney attached to the Technical Proposal.

17.4.1 A Proposal submitted by a Joint Venture shall be signed by all members so as to be legally binding on all members, or by an authorized representative who has a written power of attorney signed by each firm's authorized representative.

17.5 Any modifications, revisions, interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Proposal.

17.6 The signed Proposal shall be marked "ORIGINAL", and its copies marked "COPY" as appropriate. The number of copies is indicated in the **Data Sheet**. All copies shall be made from the signed original. If there are discrepancies between the original and the copies, the original shall prevail.

17.7 The original and all the copies of the Technical Proposal shall be placed inside of a sealed envelope clearly marked "**TECHNICAL PROPOSAL**", "[Name of the Assignment]", reference number, name and address of the Consultant, and with a warning "**DO NOT OPEN UNTIL [INSERT THE DATE AND THE TIME OF THE TECHNICAL PROPOSAL SUBMISSION DEADLINE]**."

17.8 Similarly, the original Financial Proposal (if required for the applicable selection method) shall be placed inside of a sealed envelope clearly marked "**FINANCIAL PROPOSAL**" followed by the name of the assignment, reference number, name and address of the Consultant, and with a warning "**DO NOT OPEN WITH THE TECHNICAL PROPOSAL**."

17.9 For non-registered agencies, the sealed envelopes containing the Technical and Financial Proposals shall be placed into one outer

	envelope and sealed. This outer envelope shall bear the submission address, RFP reference number, the name of the assignment, Consultant's name and the address, and shall be clearly marked "**DO NOT OPEN BEFORE** [insert the time and date of the submission deadline indicated in the Data Sheet]". **17.10** If the envelopes and packages with the Proposal are not sealed and marked as required, the Client will assume no responsibility for the misplacement, loss, or premature opening of the Proposal. **17.11** The Proposal or its modifications must be sent to the address indicated in the **Data Sheet** and received by the Client no later than the deadline indicated in the **Data Sheet**, or any extension to this deadline. Any Proposal or its modification received by the Client after the deadline shall be declared late and rejected, and promptly returned unopened.
18. Confidentiality	**18.1** From the time the Proposals are opened to the time the Contract is awarded, the Consultant should not contact the Client on any matter related to its Technical and/or Financial Proposal. Information relating to the evaluation of Proposals and award recommendations shall not be disclosed to the Consultants who submitted the Proposals or to any other party not officially concerned with the process, until the publication/notification of the Contract award information. **18.2** Any attempt by empanelled Consultants or anyone on behalf of the Consultant to influence improperly the Client in the evaluation of the Proposals or Contract award decisions may result in the rejection of its Proposal, and may be subject to the application of prevailing DJB's debarring/blacklisting procedures. **18.3** Notwithstanding the above provisions, from the time of the

	Proposals' opening to the time of Contract award publication, if a Consultant wishes to contact the Client on any matter related to the selection process, it should do so only in writing.
19. Opening of Technical Proposals	**19.1** The Client's evaluation technical committee shall conduct the opening of the Technical Proposals in the presence of the empanelled Consultants' authorized representatives who choose to attend (in person, or online if this option is offered in the **Data Sheet**). The opening date, time and the address are stated in the **Data Sheet**. **19.2** At the opening of the Technical Proposals the following shall be read out: (i) the name of the Consultant or, in case of a Joint Venture, the name of the Joint Venture, the name of the lead member and the names of all members; (ii) any modifications to the Proposal submitted prior to proposal submission deadline; and (iii) any other information deemed appropriate or as indicated in the **Data Sheet**.
20. Proposals Evaluation	**20.1** Subject to provision of Clause 15.1 of the ITC, the evaluators of the Technical Proposals shall have no access to the Financial Proposals until the technical evaluation is concluded and the DJB issues its "no objection", if applicable. **20.2** The Consultant is not permitted to alter or modify its Proposal in any way after the proposal submission deadline except as permitted under Clause 12.7 of this ITC. While evaluating the Proposals, the Client will conduct the evaluation solely on the basis of the submitted Technical and Financial Proposals.
21. Evaluation of Technical Proposals	**21.1** The Client's evaluation committee shall evaluate the Technical Proposals on the basis of their responsiveness to the Terms of Reference and the RFP, each responsive Proposal will be checked in regard to fulfillment of receipt of all the details / forms as sought by DJB in its RFP. A Proposal shall be rejected at this stage if it does not respond to important aspects of the RFP or if it fails to submit the

	documents as desired by DJB indicated in the **Data Sheet**.
22. Financial Proposals for QBS	**22.1** Not Applicable
23. Public Opening of Financial Proposals (for QCBS, FBS, and LCS methods)	**23.1** After the technical evaluation is completed and the DJB has issued its no objection (if applicable), the Client shall notify those Consultants whose Proposals were considered non-responsive to the RFP and TOR or did not submit the complete documents, then their Financial Proposals will be returned unopened after completing the selection process and Contract signing. The Client shall simultaneously notify in writing those Consultants that have selected after technical evaluation and inform them of the date, time and location for the opening of the Financial Proposals. The opening date should allow the Consultants sufficient time to make arrangements for attending the opening. The Consultant's attendance at the opening of the Financial Proposals (in person, or online if such option is indicated in the **Data Sheet**) is optional and is at the Consultant's choice. **23.2** The Financial Proposals shall be opened by the Client's evaluation committee in the presence of the representatives of those Consultants whose proposals have been selected for opening the financial bid. At the opening, the names of the Consultants, shall be read aloud. The Financial Proposals will then be inspected to confirm that they have remained sealed and unopened. These Financial Proposals shall be then opened, and the total prices read aloud and recorded. Copies of the record shall be sent to all Consultants who submitted Proposals to the DJB.

24. Correction of Errors	**24.1** Activities and items described in the Technical Proposal but not priced in the Financial Proposal, shall be assumed to be included in the prices of other activities or items, and no corrections are made to the Financial Proposal.
a. Time-Based Contracts	**24.1.1** If a Time-Based contract form is included in the RFP, the Client's evaluation committee will (a) correct any computational or arithmetical errors, and (b) adjust the prices if they fail to reflect all inputs included for the respective activities or items in the Technical Proposal. In case of discrepancy between (i) a partial amount (sub-total) and the total amount, or (ii) between the amount derived by multiplication of unit price with quantity and the total price, or (iii) between words and figures, the former will prevail. In case of discrepancy between the Technical and Financial Proposals in indicating quantities of input, the Technical Proposal prevails and the Client's evaluation committee shall correct the quantification indicated in the Financial Proposal so as to make it consistent with that indicated in the Technical Proposal, apply the relevant unit price included in the Financial Proposal to the corrected quantity, and correct the total Proposal cost.
b. Lump-Sum Contracts	**24.2** If a Lump-Sum contract form is included in the RFP, the Consultant is deemed to have included all prices in the Financial Proposal, so neither arithmetical corrections nor price adjustments shall be made. The total price, net of taxes understood as per Clause ITC 25 below, specified in the Financial Proposal (Form FIN-1) shall be considered as the offered price.
25. Taxes	**25.1** The Client's evaluation of the Consultant's Financial Proposal shall exclude taxes and duties in the Client's country in accordance with the instructions in the **Data Sheet**.
26. Conversion to	**26.1** For the evaluation purposes, prices shall be converted to a

Single Currency	single currency using the selling rates of exchange, source and date indicated in the **Data Sheet**.
27. Combined Quality and Cost Evaluation	
a. Quality- and Cost-Based Selection (QCBS)	**27.1** Not Applicable
b. Fixed-Budget Selection (FBS)	**27.2** Not Applicable
c. Least-Cost Selection	**27.3** In the case of Least-Cost Selection (LCS), the Client will select the Consultant with the lowest evaluated total price among those consultants selected for opening their financial bid, and invite such Consultant to negotiate the Contract.
D. Negotiations and Award	
28. Negotiations	**28.1** The negotiations will be held at the date and address indicated in the **Data Sheet** with the Consultant's representative(s) who must have written power of attorney to negotiate and sign a Contract on behalf of the Consultant. **28.2** The Client shall prepare minutes of negotiations that are signed by the Client and the Consultant's authorized representative.
a. Availability of Key Experts	**28.3** The invited Consultant shall confirm the availability of all Key Experts included in the Proposal as a pre-requisite to the negotiations, or, if applicable, a replacement in accordance with Clause 12 of the ITC. Failure to confirm the Key Experts' availability may result in the rejection of the Consultant's Proposal and the Client proceeding to negotiate the Contract with the next-

	ranked Consultant. **28.4** Notwithstanding the above, the substitution of Key Experts at the negotiations may be considered if due solely to circumstances outside the reasonable control of and not foreseeable by the Consultant, including but not limited to death or medical incapacity. In such case, the Consultant shall offer a substitute Key Expert within the period of time specified in the letter of invitation to negotiate the Contract, who shall have equivalent or better qualifications and experience than the original candidate.
b. Technical negotiations	**28.5** The negotiations (before opening of financial proposal) include discussions of the Terms of Reference (TORs), the proposed methodology, the Client's inputs, the special conditions of the Contract, and finalizing the "Major Scope of Work" part of the Contract. These discussions shall not substantially alter the original scope of services under the TOR or the terms of the contract, lest the quality of the final product, its price, or the relevance of the initial evaluation be affected.
c. Financial negotiations	**28.6** The negotiations include the clarification of man months, qualifications and the rate of wages paid to the experts and the instruments/technologies proposed to be used by the consultant, Consultant's tax liability in the Client's country and how it should be reflected in the Contract. **28.7** If the selection method included cost as a factor in the evaluation, the total price stated in the Financial Proposal for a Lump-Sum contract shall not be negotiated. – Not Applicable **28.8** In the case of a Time-Based contract, unit rates negotiations shall not take place, except when the offered Key Experts and Non-Key Experts' remuneration rates are much higher than the typically charged rates by consultants in similar contracts. In such case, the

	Client may ask for clarifications and, if the fees are very high, ask to change the rates after consultation with the DJB.
29. Conclusion of Negotiations	**29.1** The negotiations are concluded with a review of the finalized draft Contract, which then shall be initialed by the Client and the Consultant's authorized representative. **29.2** If the negotiations fail, the Client shall inform the Consultant in writing of all pending issues and disagreements and provide a final opportunity to the Consultant to respond. If disagreement persists, the Client shall terminate the negotiations informing the Consultant of the reasons for doing so. After having obtained the no objection from the competent authority of DJB, the Client will invite the next-ranked Consultant to negotiate a Contract. Once the Client commences negotiations with the next-ranked Consultant, the Client shall not reopen the earlier negotiations.
30. Award of Contract	**30.1** After completion of technical evaluation and opening of financial bids, client shall award the work to the L1 bidder after completion/successfulness of the negotiation rounds, to be read with the Clause 29.2. **30.2** The Consultant is expected to commence the assignment on the date and at the location specified in the **work order**.
31. Labour Laws	**31.1** The agency shall have to comply with all the relevant labor Laws applicable to the agency's employees, including laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.
32. DJB Safety Code	**32.1** The agency shall follow DJB safety code wherever applicable

Instructions to Consultants

E. Data Sheet

A. General	
ITC Clause Reference	
1 (c)	*Law of the land (Delhi)*
2.1	**Name of the Client: Delhi Jal Board,** Government of NCT of Delhi **Method of selection**: Lump Sum Contract to be decided by Least Cost (L1) Method after negotiations if required **Applicable Guidelines** *of Delhi Jal Board*
2.2	**Financial Proposal to be submitted together with Technical Proposal**: Yes **The name of the assignment is**: "Hiring of consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMA in phase-I in water supply network of DJB and its O&M for 2 years".
2.3	**A pre-proposal conference will be held**: Yes *[If "Yes", fill in the following:]* Date of pre-proposal conference:10th August, 2018 Time: 3:00 P.M. Address: Conference Hall No. 1,

	Varunalaya Phase-II, Karol Bagh, New Delhi-110005 Telephone: 01123510242 E-mail: dmacelldjb@gmail.com Contact person/Conference coordinator: *Sh. Sukhdev Kumar Dhunna,* *Mob. No. 9871949227*
2.4	**The Client shall provide the available inputs, project data, reports, etc. to facilitate the preparation of the Proposals wherever required however the agency is requested to check/authenticate the data on its own before submitting the technical and financial proposals.**
4.1	*NA*
6.3.1	**Not Applicable**
B. Preparation of Proposals	
9.1	**This RFP has been issued in the English language.** **Proposals shall be submitted in English language** **All correspondence exchange shall be in English language.**
10.1	**The Proposal shall comprise the following**: **<u>For FULL TECHNICAL PROPOSAL (FTP):</u>** **1st Inner Envelope with the Technical Proposal:** (1) Power of Attorney to sign the Proposal (2) TECH-1 (3) TECH-2 (4) TECH-3

	(5) TECH-4 (6) TECH-5 (7) TECH-6 (8) Other documents as listed in 17.4 AND **2nd Inner Envelope with the Financial Proposal:** (1) FIN-1 (2) FIN-2 (3) FIN-3 (4) FIN-4 (5) Statement of Undertaking (if required under Data Sheet 10.2 below)
10.2	**Statement of Undertaking is required** Yes
11.1	**Participation of Sub-consultants, Key Experts and Non-Key Experts in more than one Proposal is permissible :** No
12.1	**Proposals must remain valid for** *120 (one hundred twenty) days* calendar days after the proposal submission deadline (i.e., until: 8th January 2019).
13.1	**Clarifications may be requested no later than** 15 **days prior to the submission deadline.** The address for requesting clarifications is: All requests for clarifications shall be made online through mail at E-mail: dmacelldjb@gmail.com
14.1.1	**Shortlisted Consultants may associate with** **(a) non-shortlisted consultant(s):** Yes **Or** **(b) other shortlisted Consultants:** No

14.1.2	**Estimated input of Key Experts' time input : Yes**
14.1.3	*Not Applicable*
14.1.4	*Not Applicable*
15.2	The format of the Technical Proposal to be submitted is: FTP Submission of the Technical Proposal in a wrong format may lead to the Proposal being deemed non-responsive to the RFP requirements.
16.1	*List of applicable Reimbursable expenses in local currency:Not Applicable* *(1) a per diem allowance, including hotel, for experts for every day of absence from the home office for the purposes of the Services;* *(2) cost of travel including transportation of personnel by the most appropriate means of transport and the most direct practicable route;* *(3) cost of office accommodation, including overheads and back-stop support;* *(4) cost of investigations* *(5) communications costs;* *(6) cost of reports production (including printing) and delivering to the Client;* (7) *Cost of such further items required for purposes of the Services not covered in the foregoing* (8) *Others*
16.2	**A price adjustment provision applies to remuneration rates:** No

16.3	Amounts payable by the Client to the Consultant under the contract to be subject to local taxation: Yes The Client will reimburse the Consultant for indirect local taxes such as **service tax, during the contract period** -Yes -reimburse the Consultant income tax paid in India on the remuneration for services provided by the non-resident staff of the consultant – No
16.4	**The Financial Proposal shall be stated in the following currencies:** Consultant may express the price for their Services in Indian National Rupees only i.e. in Rupees.
C. Submission, Opening and Evaluation	
17.1	**The Consultants *shall* submit their Proposals in hardcopies kept in sealed envelope with the soft copy (scanned originals) of technical proposal at the e-mail address dmacelldjb@gmail.com.**
17.4	**The Consultant must submit:** **Real submission** (a) **Technical Proposal:** one (1) hard Copy of the original proposal **kept in sealed envelope**, containing the following documents (in addition to those mentioned at 10.1) as essential requirements of successfully qualifying technical evaluation subject to correctness of details provided and technical competency to execute all the activities as per scope of work. 1. **Earnest money of Rs. 5,00000/- (Five Lakhs only)** in the form of Banker's cheque or Demand draft or fixed deposit receipt of a schedule bank drawn in favour of **Delhi Jal Board.** 2. Tender Fee of Rs. 1500/- in favour of Delhi Jal Board to be deposited in Syndicate Bank or & receipt copy to be scanned & uploaded or attached with RFP (technical bid) or this fees can be directly paid through RTGS to EE (Project) Water-I in the Account No. 90231010000265, IFSC Code-SYNB0009023, Syndicate Bank, Branch- Rani Jhansi Road, New Delhi and its proof to be uploaded or attached in technical bid.

	3. Valid certification of empanelment by MoUD as on date of submission of technical and financial bid. 4. Copies of completed/ongoing works/awarded works in the field of reduction of NRW. Leakage control/DMAs to be attached along with RFP (In technical bid) 5. Registration certificate of GST. 6. Consent of Key Expert. **Financial Proposal:** one (1) hard Copy of the original proposal kept in sealed envelope to be submitted in the office of EE(Proj.)W-I. **(b) Online Submission (of technical proposal only) Not applicable** Those agencies which are registered with DJB/Delhi government, may download the RFP document from the website: http://govtprocurement.delhi.gov.in, and they have to submit their technical bid, complete Proposal comprising the documents and forms in accordance with Clause 10 & 17.4 (Documents Comprising Proposal), online, on or before the last date and time of submission of bids. Such agencies have to submit one scanned copy of the complete set of technical bid in a sealed envelope in the office of EE(Proj.)W-I. Financial bid has to be submitted offline in a sealed envelope in the office of EE(Proj.)W-I.
17.7 and 17.9	**The Proposals must be submitted no later than:** **Offline - Date:** 10th September, 2018 **Time:** 15.00 hrs. *Real submission (Technical and financial proposal)* **Date:** 10th September, 2018 **Time:** 15.00 hrs. **The Proposal submission address is:** OFFICE OF THE EXECUTIVE ENGINEER (PROJECT) W-I DELHI JAL BOARD; GOVT. OF NCT OF DELHI 5TH FLOOR, VARUNALAYA PHASE-I, JHANDEWALAN, NEW DELHI-

	110055.
19.1	**An online option of the opening of the Technical Proposals is offered:** No **The opening shall take place at:** *[Insert:* "same as the Proposal submission address*" OR insert and fill in the following:* Address: OFFICE OF THE EXECUTIVE ENGINEER (PROJECT) W-I DELHI JAL BOARD; GOVT. OF NCT OF DELHI 5TH FLOOR, VARUNALAYA PHASE-I, JHANDEWALAN, NEW DELHI-110055. **Date**: same as the submission deadline indicated in 17.7. **Time:** *15:10 Hrs.*
19.2	**In addition, the following information will be read aloud at the opening of the Technical Proposals – Not Applicable**
21.1 (for FTP	Criteria, sub-criteria, and point system for the evaluation of the Full Technical Proposals: Not Applicable
23.1	**An online option of the opening of the Financial Proposals is offered:** No
24.1.1	**Not Applicable**
25.1	For the purpose of the evaluation, the Client will exclude: (a) all identifiable indirect taxes such as Service Tax or similar taxes levied on the Consultant's invoices **All applicable taxes shall be paid by the Consulting firm** **The Client shall reimburse the Service Tax to the consultant as per the applicable rates**
26.1	**The single currency of all prices shall be expressed in Indian National Rupees only.**

27.1 **a. Quality & cost based selection (QCBS only)**	*NA*
27.2 **b. Fixed budget selection (FBS)**	*NA*
	D. Negotiations and Award
28.1	**Expected date and address for contract negotiations:** **Expected date** To be intimated. **Address:** Office of Superintending Engineer (Project) Water-I Delhi Jal Board Room No. 405, 4th Floor, Varunalaya, Phase-I, Karol Bagh, New Delhi – 110005.
28.2	**Applicable**
28.4	**Applicable**
28.5	**Applicable**
28.6	**Applicable**
28.7	**Not Applicable**

28.8	**Not Applicable**
29.1	**Applicable**
29.2	**Applicable**
30.1	**Applicable**
30.2	**Expected date for the commencement of the Services: [Shall be as per work order]**

SECTION 3. Technical Proposal – Standard Forms

{Notes to Consultant shown in brackets { } throughout Section 3 provide guidance to the Consultant to prepare the Technical Proposal; they should not appear on the Proposals to be submitted.}

CHECKLIST OF REQUIRED FORMS

Required for FTP or STP (√)		FORM	DESCRIPTION	*Page Limit (Not Applicable)*
FTP	STP			
√	√	TECH-1	Technical Proposal Submission Form.	
"√ " If applicable		TECH-1 Attachment	If the Proposal is submitted by a joint venture, attach a letter of intent or a copy of an existing agreement.	
"√" If applicable		Power of Attorney	No pre-set format/form. In the case of a Joint Venture, several are required: a power of attorney for the authorized representative of each JV member, and a power of attorney for the representative of the lead member to represent all JV members	
√		TECH-2	Consultant's Organization and Experience.	
√		TECH-2A	A. Consultant's Organization	
√		TECH-2B	B. Consultant's Experience	
√		TECH-3	Comments or Suggestions on the Terms of Reference and on Counterpart Staff and Facilities to be provided by the Client.	

√		TECH-3A	A. On the Terms of Reference	
√		TECH-3B	B. On the Counterpart Staff and Facilities	
√	√	TECH-4	Description of the Approach, Methodology, and Work Plan for Performing the Assignment	
√	√	TECH-5	Work Schedule and Planning for Deliverables	
√	√	TECH-6	Team Composition, Key Experts Inputs, and attached Curriculum Vitae (CV)	

All pages of the original Technical and Financial Proposal shall be initialled by the same authorized representative of the Consultant who signs the Proposal.

FORM TECH-1

TECHNICAL PROPOSAL SUBMISSION FORM

{Location, Date}

To:
OFFICE OF THE EXECUTIVE ENGINEER (PROJECT) W-I
DELHI JAL BOARD; GOVT. OF NCT OF DELHI
VARUNALAYA PHASE-I, JHANDEWALAN, NEW DELHI-110055

Dear Sir:

We, the undersigned, offer to provide the consulting services for "Hiring of consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMAs, in phase-I in water supply network of DJB and its O&M for 2 years", in Delhi city, in accordance with your Request for Proposal dated ..... *August, 2018* and our Proposal on the Least Cost (L1) method: "We are hereby submitting our Proposal, which includes this Technical Proposal and a Financial Proposal

{If the Consultant is a joint venture, insert the following: We are submitting our Proposal a joint venture with: {Insert a list with full name and the legal address of each member, and indicate the lead member}. We have attached a copy {insert: "of our letter of intent to form a joint venture" or, if a JV is already formed, "of the JV agreement"} signed by every participating member, which details the likely legal structure of and the confirmation of joint and severable liability of the members of the said joint venture.

{OR

If the Consultant's Proposal includes Sub-consultants, insert the following: We are submitting our Proposal with the following firms as Sub-consultants: {Insert a list with full name and address of each Sub-consultant.}

We hereby declare that:

(a) All the information and statements made in this Proposal are true and we accept that any misinterpretation or misrepresentation contained in this Proposal may lead to our disqualification by the Client.

(b) Our Proposal shall be valid and remain binding upon us for the period of time specified in the Data Sheet, Clause 12.1.

(c) We have no conflict of interest in accordance with ITC 3.

(d) We meet the eligibility requirements as stated in ITC 6, and we confirm our understanding of our obligation to abide by the DJB's policy in regard to corrupt and fraudulent practices as per ITC 5.

(e) We, along with any of our sub-consultants, subagencys, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by a member of the World Bank Group or a debarment imposed by the DJB or any other government/semi-government/PSU in India. Further, we are not ineligible under the Employer's country laws or official regulations.

(f) In competing for (and, if the award is made to us, in executing) the Contract, we undertake to observe the laws against fraud and corruption, including bribery, in force in the city/country of the Client.

(g) Except as stated in the Data Sheet, Clause 12.1, we undertake to negotiate a Contract on the basis of the proposed Key Experts. We accept that the

substitution of Key Experts for reasons other than those stated in ITC Clause 12 and ITC Clause 28.4 may lead to the termination of Contract negotiations. -

(h) Our Proposal is binding upon us and subject to any modifications resulting from the Contract negotiations.

We undertake, if our Proposal is accepted and the Contract is signed, to initiate the Services related to the assignment no later than the date indicated in Clause 30.2 of the Data Sheet.

We understand that the Client is not bound to accept any Proposal that the Client receives.

We remain,

Yours sincerely,

Authorized Signature {In full and initials}: _____

Name and Title of Signatory: _____

Name of Consultant (company's name or JV's name):

In the capacity of: _____

Address: _____

Contact information (phone and e-mail): _____

{For a joint venture, either all members shall sign or only the lead member, in which case the power of attorney to sign on behalf of all members shall be attached}

FORM TECH-2

CONSULTANT'S ORGANIZATION AND EXPERIENCE

Form TECH-2: a brief description of the Consultant's organization and an outline of the recent experience of the Consultant that is most relevant to the assignment. In the case of a joint venture, information on similar assignments shall be provided for each partner. For each assignment, the outline should indicate the names of the Consultant's Key Experts and Sub-consultants who participated, the duration of the assignment, the contract amount (total and, if it was done in a form of a joint venture or a sub-consultancy, the amount paid to the Consultant), and the Consultant's role/involvement.

A - Consultant's Organization

1. Provide here a brief description of the background and organization of your company, and – in case of a joint venture – of each member for this assignment.

2. Include organizational chart, a list of Board of Directors, and beneficial ownership

B - Consultant's Experience

1. List only previous <u>similar</u> assignments successfully awarded/on-going/completed[1] in the last *7 (seven)* years.

2. List only those assignments for which the Consultant was legally contracted by the Client as a company or was one of the joint venture partners. Assignments completed by the Consultant's individual experts working privately or through other consulting firms cannot be

[1] The Claims of completion shall be self-certified. A copy of work order/ agreement required to be submitted. Substantially completed assignments shall be considered in case the Applicant has completed and submitted Draft Final Report. The client may seek clarifications, if required

claimed as the relevant experience of the Consultant, or that of the Consultant's partners or sub-consultants, but can be claimed by the Experts themselves in their CVs. The Consultant should be prepared to substantiate the claimed experience by presenting copies of relevant documents and references if so requested by the Client.

Duration	**Assignment name/& brief description of main deliverables/outputs**	**Name of Client & Country of Assignment**	**Approx. Contract value (in INR)**	**Role on the Assignment**
{e.g., Apr.2011–Mar. 2018}	{e.g., Creation of DMAs, elevation survey of DMAs, Leak detection, detection unaunthorized consumption in the DMAs, Reduction of NRW and retain the reduction in NRW in the DMAs etc. ,.....; }	{e.g., Ministry of ....., country}	{e.g., INR}	{e.g., Lead partner in a JV A&B&C or Sole Consultant }
{e.g., Apr. 2018-July 2018}	{e.g., Creation of DMAs, elevation survey of DMAs ,Leak detection, detection unaunthorized consumption in the DMAs, Reduction of NRW and retain the reduction in NRW in the DMAs etc. ,.....; }	{e.g., municipality of....., country}	{e.g., INR}	{e.g., Lead partner in a JV A&B&C or Sole Consultant }

FORM TECH-3 :

NOT APPLICABLE FOR THIS RFP

COMMENTS AND SUGGESTIONS ON THE TERMS OF REFERENCE, COUNTERPART STAFF, AND FACILITIES TO BE PROVIDED BY THE CLIENT

Form TECH-3: comments and suggestions on the Terms of Reference that could improve the quality/effectiveness of the assignment; and on requirements for counterpart staff and facilities, which are provided by the Client, including: administrative support, office space, local transportation, equipment, data, etc.

A - On the Terms of Reference

{improvements to the Terms of Reference, if any}

B - On Counterpart Staff and Facilities

{comments on counterpart staff and facilities to be provided by the Client. For example, administrative support, office space, local transportation, equipment, data, background reports, etc., if any}

FORM TECH-4

DESCRIPTION OF APPROACH, METHODOLOGY, AND WORK PLAN IN RESPONDING TO THE TERMS OF REFERENCE

Form TECH-4: a description of the approach, methodology and work plan for performing the assignment, including a detailed description of the proposed methodology and staffing for training, if the Terms of Reference specify training as a specific component of the assignment.

{Suggested structure of your Technical Proposal (in FTP format):

a) Technical Approach and Methodology
b) Work Plan
c) Organization and Staffing}

a) ***Technical Approach and Methodology.*** {Please explain your understanding of the objectives of the assignment as outlined in the Terms of Reference (TORs), the technical approach, and the methodology you would adopt for implementing the tasks to deliver the expected output(s), and the degree of detail of such output. **Please do not repeat/copy the TORs in here.}**

b) ***Work Plan.*** {Please outline the plan for the implementation of the main activities/tasks of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the Client), and tentative delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing your understanding of the TOR and ability to translate them into a feasible working plan. A list of the final documents (including reports) to be delivered as final output(s) should be included here. The work plan should be consistent with the Work Schedule Form.}

c) ***Organization and Staffing.*** {Please describe the structure and composition of your team, including the list of the Key Experts, Non-Key Experts and relevant technical and administrative support staff.}

PROPOSED TECHNICAL APPROACH STRATEGIES AND METHOD STATEMENT'S

The following information is to be supplied by the Agency to demonstrate how he will undertake certain activities involved in the work. The Tenderer should include brochures, drawings and other relevant literature that would provide a good understanding of what he proposes to do and how he will achieve the goals of the Contract.

Topic

DATA COMMUNICATIONS AND RECORDING

Describe below your approach to data communications and recording of pressures and flows, etc., and also include procedure for manual collecting of data include suitable system architecture (please include drafts or samples as appropriate).

Topic

NETWORK MODELLING

Provide below your detailed method statement and strategy for undertaking network analysis and distribution system modeling to design the DMAs, identify mains that are or will be under-sized to meet future demands, and where improvements can be made to distribution system efficiency.

(please include software details, brochures or samples as appropriate).

Topic

DESIGN OF DISTRICT METERED AREAS

Provide below your detailed method statement and specification for undertaking the design of the DMAs - District Meter Areas (please include drafts or samples as appropriate).

TOPIC

DISTRIBUTION PIPE NETWORK MAPPING SURVEYS

Provide below your detailed method statement for undertaking the pipeline mapping surveys, elevation surveys, including equipment you propose to use. etc. (please include drafts or samples as appropriate).

TOPIC

PIPE CONDITION AND CORROSION MAPPING SURVEYS

Provide below your detailed method statement for undertaking pipe condition and corrosion assessment surveys to identify which pipe lengths within the distribution system need to be replaced due to their poor condition (please include details of the equipment you propose to use, including brochures or samples as appropriate).

Topic

LEAKAGE DETECTION

Provide below your detailed method statement for detecting the hidden leakages and the detailed methodology, equipments and the technology to detect the hidden leakages in the HSCs/distribution network.

(please include details of the equipment you propose to use, including brochures or samples as appropriate).

Assignment Schedule:

key deliverables from the contract are listed below.

i. Inception Report

ii. Interim Report

iii. Draft Final Report

iv. Final Report

In addition to the above, the Consultant is expected to send monthly reports to DJB on the progress of the assignment.

The work plan and timelines agreed upon by DJB and the Consultant is shown in

Inception and Mobilization:

Kick-Off Workshop

The kickoff workshop shall be conducted. Selected Firm's team shall interact with DJB staff dealing with the selected nearly 102 DMAs.

FORM TECH-5

WORK SCHEDULE AND PLANNING FOR DELIVERABLES

N	Deliverables [1] (D-..)	Months											
		1	2	3	4	5	6	7	8	9	.....	18+24	TOTAL
Part-I	In addition to reports generation/[reparation and submission following activity-wise work schedule and planning are required												
1	DMA identification												
2	Network marking and mapping												
3	Consumer Mapping												
4	Feasibility of formation of DMA, Confirmation of DMA boundaries and submission of Inception Report												
5	Identification of critical points and installation of pressure loggers &												

	electronic flow meters, etc.												
6	Verification of Data provided by EE (Civil) & (E&M), LDI, Mapping Cell & CCR, WIPRO, Revenue etc.												
7	Detection of Unauthorised water consumption (Apparent Losses)												
8	Leak detection to find out hidden leakages in distribution system (Real Losses)												
9	Isolation of DMA												
10	Leakage Repair												
11	Calibration of flow meters												
12	Randomly testing of Consumer Water meters & Replacement of defective water meters												
13	Collecting the Flow meter data by making online data submission form												
14	Consumption of billed water and evaluate of unbilled consumption.												
15	Checking/Verification of Meter												

	Reading data provided by DJB and to verify unauthorised consumption in the construction works												
16	To achieve the target of 95% billing												
17	NRW calculation- bi-monthly												
18	If NRW < CPHEEO/MOUD Standards, then monitoring continuously												
19	Hydraulic Modeling, If NRW > 15% CPHEEO Standards.												
20	Elevation Survey												
21	Technical assistance to prepare the rehabilitation estimates												
22	Monitoring of Rehabilitation work.												
23	Submission of reports												
Part-II	O&M works (As per RFP scope of Work)												

1 List the deliverables with the breakdown for activities required to produce them and other benchmarks such as the Client's approvals. For phased assignments, indicate the activities, delivery of reports, and benchmarks separately for each phase.

2 Duration of activities shall be indicated in a form of a bar chart.

3. Include a legend, if necessary, to help read the chart.

FORM TECH-6

TEAM COMPOSITION, ASSIGNMENT, AND KEY EXPERTS' INPUTS

N°	Name	Expert's input (in person/month) per each Deliverable (listed in TECH-5)										Total time-input (in Months)		
		Position		D-1	D-2	D-3	.....	D-...				Office in Delhi	Field	Total
KEY EXPERTS														
K-1	{e.g., Mr. Abbbb}	[Team Leader]	[Office]	[2 month]	[1.0]	[1.0]								
			[*Field*]	[0.5 m]	[2.5]	[0]								
K-2														
K-3														
n														

									Subtotal							
NON-KEY																
N-1			[*Office*]													
			[*Field*]													
N-2																
n																
									Subtotal							
									Total							

1 For Key Experts, the input should be indicated individually for the same positions as required under the Data Sheet ITC21.1.

2 Months are counted from the start of the assignment/mobilization. One (1) month equals twenty two (22) working (billable) days. One working (billable) day shall be not less than eight (8) working (billable) hours.

3 "Office" means work space in DJB

4. 'Field" means work carried out at a site of 102 DMAs mentioned in the RFP

Full time input

Part time input

FORM TECH-6

(CONTINUED)

CURRICULUM VITAE (CV)

Position Title and No.	{e.g., K-1, TEAM LEADER}
Name of Expert:	{Insert full name}
Date of Birth:	{day/month/year}
Country of Citizenship/Residence	

Education: {List college/university or other specialized education, giving names of educational institutions, dates attended, degree(s)/diploma(s) obtained}

_____

_____

Employment record relevant to the assignment: {Starting with present position, list in reverse order. Please provide dates, name of employing organization, titles of positions held, types of activities performed and location of the assignment, and contact information of previous clients and employing organization(s) who can be contacted for references. Past employment that is not relevant to the assignment does not need to be included.}

Period	**Employing organization and your title/position. Contact infor for references**	**Country**	**Summary of activities performed relevant to the Assignment**
[e.g., May 2005-present]	[e.g., Ministry of ……, advisor/consultant to… For references: Tel……/e-		

	mail……; Mr. Hbbbbb, deputy minister]		

Membership in Professional Associations and Publications: _____

Language Skills (indicate only languages in which you can work): _____

_____

Application Softwares' Expertises: _____

Adequacy for the Assignment:

Detailed Tasks Assigned on Consultant's Team of Experts:	**Reference to Prior Work/Assignments that Best Illustrates Capability to Handle the Assigned Tasks**
{List all deliverables/tasks as in TECH- 5 in which the Expert will be involved)	

Expert's contact information: (e-mail ……., phone……)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available to undertake the assignment in case of an award. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the Client.

{day/month/year}

Name of Expert Signature

Date

{day/month/year}

Name of authorized Signature

Date

Representative of the Consultant

(the same who signs the Proposal

SECTION 4. Financial Proposal - Standard Forms

{*Notes to Consultant* shown in brackets { } provide guidance to the Consultant to prepare the Financial Proposals; they should not appear on the Financial Proposals to be submitted.}

Financial Proposal Standard Forms shall be used for the preparation of the Financial Proposal according to the instructions provided in Section 2.

FIN-1 Financial Proposal Submission Form

FIN-2 Summary of Costs

FIN-3 Breakdown of Remuneration, including Appendix A "Financial Negotiations - Breakdown of Remuneration Rates" in the case of QBS method

FIN-4 Reimbursable expenses

FORM FIN-1

FINANCIAL PROPOSAL SUBMISSION FORM

{Location, Date}

To:
OFFICE OF THE EXECUTIVE ENGINEER (PROJECT) W-I
DELHI JAL BOARD; GOVT. OF NCT OF DELHI
VARUNALAYA PHASE-I, JHANDEWALAN, NEW DELHI-110055.

Dear Sir:

We, the undersigned, offer to provide the consulting services for "Hiring of consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMAs, in phase-I in water supply network of DJB and its O&M for 2 years", in Delhi, in accordance with your Request for Proposal dated [.2018] and our Technical Proposal.

Our attached Financial Proposal is for the amount of {Indicate the corresponding to the amount(s) currency(ies)} {Insert amount(s) in words and figures}, *[Insert "including" or "excluding"] of all indirect local taxes in accordance with Clause 25.1 in the Data Sheet.* The estimated amount of local indirect taxes is {Insert currency} {Insert amount in words and figures} which shall be confirmed or adjusted, if needed, during negotiations. {Please note that all amounts shall be the same as in Form FIN-2}.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e. before the date indicated in Clause 12.1 of the Data Sheet.

Commissions and gratuities paid or to be paid by us to an agent or any third party relating to preparation or submission of this Proposal and Contract execution, paid if any, shall not be claimed for reimbursement by us if we are awarded the Contract

{If no payments are made or promised, add the following statement: "No commissions or gratuities have been or are to be paid by us to agents or any third party relating to this Proposal and Contract execution."}

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature {In full and initials}: _____

Name and Title of Signatory: _____

In the capacity of: _____

Address: _____

E-mail: _____

{For a joint venture, either all members shall sign or only the lead member/consultant, in which case the power of attorney to sign on behalf of all members shall be attached}

FORM FIN-2 SUMMARY OF LUMP SUM COSTS

Item	**Cost** {Consultant must state the proposed Costs in accordance with Clause **16.4 of the Data Sheet**; delete columns which are not used} {*Insert* *Local Currency, if used and/or required (16.4 Data Sheet*}
Total Cost of the Financial Proposal	
Including:	
(1) **Remuneration**	
(2)**Reimbursables**	As per Data Sheet

Footnote: Payments will be made in the currency- Indian Rupees

FORM FIN-3 BREAKDOWN OF REMUNERATION

When used for Lump-Sum contract assignment, information to be provided in this Form shall only be used to demonstrate the basis for the calculation of the Contract's ceiling amount; to calculate applicable taxes at contract negotiations; and, if needed, to establish payments to the Consultant for possible additional services requested by the Client. This Form shall not be used as a basis for payments under Lump-Sum contracts

A. Remuneration _____

No.	**Name**	**Position (as in TECH-6)**	**Person-month Remuneration Rate**	**Time Input in Person/Month** (from TECH-6)	{*Local Currency- as in FIN-2}*
___	**Key Experts**	_____	_____	_____	_____
K-1 ___	_____		[*Office in Delhi*]	_____	
___			[*Field*]	_____	
K-2 ___	_____			_____	

	Non-Key Experts				
N-1			[*Office in Delhi*]		
N-2			[*Field*]		
				Total Costs	

FORM FIN-4 BREAKDOWN OF REIMBURSABLE EXPENSES

NOT APPLICABLE

When used for Lump-Sum contract assignment, information to be provided in this Form shall only be used to demonstrate the basis for calculation of the Contract ceiling amount, and, if needed, to establish payments to the Consultant for possible additional services requested by the Client. This form shall not be used as a basis for payments under Lump-Sum contracts

B. Reimbursable Expenses_____

No	**Type of Reimbursable Expenses**	**Unit**	**Unit Cost**	**Quantity**	{Local Currency- as in FIN-2}
	{e.g., Per diem	{Day}			
	{e.g., International	{Ticke			
	(e.g., Domestic travels)	{Trip}			
	{e.g., In/out airport /Rly Station/Bus Stand	{Trip}			
	Local Travel	Month			
	{e.g., Communication costs (telephone, internet etc.}	Month			
	{ e.g., reproduction of	month			
	{e.g., Office running cost	month			

	including stationery, office maintenance, office equipment etc.)				
	.....				
				Total Costs	

Legend*:*

“Per diem allowance” is paid for each night the expert is required by the Contract to be away from his/her usual place of residence.

Section 5. Eligible Countries

In reference to ITC 6.3.2, for the information of empanelled Consultants, at the present time firms, goods and services from the following countries are excluded from this selection:

Under the ITC 6.3.2 (a): None

Under the ITC 6.3.2 (b): None

SECTION 6. DJB Policy – Corrupt and Fraudulent Practices

Guidelines for Selection and Employment of Consultants

"Fraud and Corruption"

1.23 In this context, any action taken by a consultant or any of its personnel, or its agents, or its sub-consultants, sub-agencys, services providers, suppliers, and/or their employees, to influence the selection process or contract execution for undue advantage is improper.. In pursuance of this policy, the DJB:

(a) Defines, for the purposes of this provision, the terms set forth below as follows:

(i) "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party[2];

(ii) "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation[3];

(iii) "collusive practices" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party[4];

[2] For the purpose of this sub-paragraph, "another party" refers to a public official acting in relation to the selection process or contract execution. In this context "public official" includes employees of other organizations taking or reviewing selection decisions.

[3] For the purpose of this sub-paragraph, "party" refers to a public official; the terms "benefit" and "obligation" relate to the selection process or contract execution; and the "act or omission" is intended to influence the selection process or contract execution.

[4] For the purpose of this sub-paragraph, "parties" refers to participants in the procurement or selection process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish prices at artificial, non-competitive levels, or are privy to each other's bid prices or other conditions.

(iv) "coercive practices" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party[5];

(b) will reject a proposal for award if it determines that the consultant recommended for award or any of its personnel, or its agents, or its sub-consultants, sub-agencys, services providers, suppliers, and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

[5] For the purpose of this sub-paragraph, "party" refers to a participant in the selection process or contract execution.

SECTION 7. TERMS OF REFERENCE

7.0 SCOPE OF WORK

What is NRW

The difference between the amount of water put into the distribution system and the amount of water billed to customers is known as Non-Revenue water (NRW). NRW is made up of real losses and apparent losses. Real losses occur in distribution systems, service connections, bursts and storage tanks (including overflow). Apparent loss includes meter and record inaccuracies and unauthorized water uses such as theft and unauthorized connections. Authorized unmetered uses can also be considered as one of the components of NRW.

NRW Bench Mark:

The services level benchmark for NRW is 15% as per CPHEEO guidelines.

It is thus obvious that the there is considerable scope for reduction of NRW. Though reduction of NRW is a very big challenge, there have been examples of successful reduction of NRW as observed from the cases of Singapore where the NRW is 5 % and in Phnom Penh where NRW is 5.9%. In our country, through there are no major examples of successful NRW reduction at a city level, there are a few examples where an attempt has been made to reduce NRW with a fair degree of success.

a. Hubli Dharwar, Karnataka – NRW reduction from 50 % to 7 % in pilot area.
b. Nagpur, Maharashtra Dharampeth- NRW reduction from 50 % to 32 % in pilot area.
c. Malkapur, Maharashtra- NRW reduction from 40 % to 12 % in pilot area
d. Navi Mumbai, Maharashtra- NRW reduction from 51 % to 21 % in pilot area
e. Shashtri Nagar, Jamshedpur- NRW reduction from 31 % to 8 % in pilot area
f. Amaravati, Maharashtra- NRW reduction from 50 % to 15 % in pilot area

The need to reduce NRW is well acknowledged in view of its potential to increase availability of water and also improve the financial viability of the utility> However, it has generally been observed that reduction of NRW has not been adequately prioritized in our country for various reasons including inadequate understanding of the problem (magnitude, source, costs); Lack of capacity (insufficient trained staff); Inadequate funding to replace

infrastructure (pipes; maters); lack of management commitment; and weak enabling environment and performance incentives.

Purpose of hiring the agency for the reduction of NRW:

The purpose of hiring the agency for the reduction of NRW is to assist the DJB in preparing an effective Non Revenue Water Reduction (NRW) strategy and implementation action plan for reduction of NRW including 2 year O&M . The expected outcomes of the implementation of an NRW reduction strategy include the following:

1. Reducing water loss and minimizing inefficient use of water can defer major investments required for the development of new water sources as also the associated environmental impacts;
2. NRW reduction could be one of the major solutions to overcome inequitable supply and increasing supply/ demand gap;
3. More coverage, reliability and quality of service can be achieved by increased water availability which can result in greater customer satisfaction;
4. Utilities can improve their financial viability;
5. Reducing leakages and improving the quality of networks would help reduce the risk of contamination of water supplied to consumers; and
6. More efficient and sustainable utilities improve the customers service.

To achieve the objective of the assignment, it is envisaged that the consulting firm will assess 'As is situation" e.g. collection, collation and analysis of existing data, field tests as required to assess and estimate the level of apparent losses through illegal connections, billing errors, and collection system real losses through leaks and bursts in primary and secondary networks and house service connections and reservoir overflows and develop a strategy for structured control and reduction of NRW in a phased manner (short term, Midterm and long term) to enable provision of continuous pressurized water supply services to the customers.

- The Consultant will prepare a detailed 1 to 3 year NRW reduction strategy (yearly activity plan) based on reduction of losses proposed and cost associated (i.e. no cost, low cost, medium cost and high cost interventions).
- The consultant will assess the area wise water losses (in each DMA), identify the reasons for water losses and suggest specific solutions for each area. The Consultant

will also prepare a detailed real and apparant loss reduction forecasts for the detailed plan.

- The Consultant shall on its own or through outsourcing to any other agency shall execute the works of Leak detection, elevation survey, detection of unauthorized connections etc.
- The consultant will broadly undertake following key activities:
  i. Data collection on existing infrastructure assets
  ii. Sample surveys in consultation with the DJB revenue wing for determining the customer consumption volumes
  iii. Prepare current water balance as per International Water Association (IWA) methodology
  iv. To do the Energy Audit of the machinery being used for the, Water treatment and supply in about 102 DMAs
  v. Establish current monthly levels of NRW with breakup of apparant and real losses and evaluate the economic loss to the utility
  vi. Develop strategy for progressive reduction of NRW with detailed action plan and costs involved
  vii. Evaluate options for implementation of NRW reduction strategy
  viii. Provide roadmap for improvement in current system to achieve the objectives of the assignment.
  ix. Prepare implementation contract documents on performance based NRW reduction framework
  x. Monitoring of Rehabilitation works proposed by the consulting firm (shall be executed by EE concerned by call of tenders)
  xi. Continuous monitoring of DMAs after the completion of rehabilitation works till the completion of O&M period of two years to maintain the reduced percentage of NRW and wherever the NRW has again exceeded the set limits prepare further strategies and its implementation plan to reduce percentage of NRW

7.1 INTRODUCTION

BACKGROUND OF DELHI JAL BOARD

The Delhi Jal Board (DJB) constituted under the Delhi Jal Board Act, 1998, is responsible for the production and distribution of drinking water as also for collection, treatment and disposal of domestic sewage in the Capital.

SERVICES PROVIDED

a) Supply of potable drinking water
b) Supply of potable water through tankers whenever needed
c) Supply of packaged water, "JAL", in Jars through Jal Suvidha Kendras
d) Treatment and disposal of sewage
e) Supply of Biogas/Sludge Manure/treated waste water
f) Testing of water samples
g) Technical support for installation of Rain Water Harvesting System through Rain Centres and Divisional office.

WATER SECTOR

- Delhi's water production has been maintained as 900 MGD.
- Water is supplied to about 19 million population of Delhi through a water supply network comprising 14000 km long pipelines and 107 Underground Reservoirs (UGRs)
- Defective Pre stressed Cement Pipe rising mains from Water Treatment plants are being replaced with good quality MS lined and coated pipes to reduce the water losses.
- The DJB has proposed replacing House Service Connections in a phased manner with MDPE based connection to reduce water losses and contamination through consumers' connections.
- Bulk Water meters and domestic meters have been replaced with high quality meters.
- Waer Improvement Projects are in progress in the command of Malviya Nager UGR, Nangloi WTP, Vasant Vihar and Mehrauli to reduce NRW, improve water pressure, increase collection efficiency etc. The scope of work includes replacement/augmentation of existing water network, all house service connections and water meter replacement, in

addition to survey of entire network and all leakages including invisible leakages repaired etc. Following are the key performance indications:

- Converting intermittent supply into 24X7 water supply.
- Reduction of NRW
- Reducing power consumption
- Ensure quality of water
- Improving collection efficiency
- Quick disposal of complaints.

RAW WATER SOURCES AND WATER PRODUCTION

S.N.	Name of WTP	Installed Capacity of WTP (In MGD)	Average Production (In MGD)	Source of Raw Water
1	Sonia Vihar	140	140	Upper Ganga Canal
2	Bhagirathi	100	100	Upper Ganga Canal
3	Chandrawal I & II	90	95	River Yamuna
4	Wazirabad I, II & III	120	123	River Yamuna
5	Haiderpur I & II	200	210	Bhakra Storage & Yamuna
6	Nangloi	40	40	Bhakra Storage
7	Okhla	20	20	Raw water from Munak Canal
8	Bawana	20	15	
9	Dwarka	50	40	
10	Recycling Plants	45	40	Process waste water in the existing plant
11	Ranney wells & Tube wells	80	80	Ground Water
	Total		**900 MGD**	

7.2 NEED OF THE THIS PROJECT

One of the major issues which is also affecting DJB is high Non-Revenue Water (NRW). High levels of NRW seriously affect the sustainability of water utilities through lost revenues and increased operational costs at times affect the expansion of services. Although it is not feasible to eliminate all NRW in a water utility, reducing the current level of losses to a reasonably realistic target duly taking into account the economical level of leakage control is an urgent necessity so as not to burden the customers with inefficient and expensive water services. Agency shall have to bring NRW to a minimum level of 15% as specified by CPHEEO.

It is often stated that NRW reduction activities have a quick payback by reducing real leakages that require significant working capital investment, skill, and sustained efforts and also help in reducing the chances of contamination. One of the prime methods of reducing NRW is creation of District Metered Area (DMA). This is done by dividing the distribution network into smaller parts for monitoring, and making strategies for reduction of NRW.

7.3 DMA DEFINITIONS

District Metered Area (DMA): Hydraulically isolated Water supply and distribution Network where inflow and outflow (Consumer meter flow) is measured and NRW is monitored continuously.

Pilot DMA: Those DMAs that are prioritized for Pilot Flow Meter Monitoring, 100% Consumer Metering and Billing; and continuous monitoring of NRW and its components. In this project work, 102 DMAs are taken in-house in Pilot DMA implementation.

Structured DMA: A DMA where Boundary is identified, Isolation is checked; Flowmeters are placed on all Inlet and Outlets, (More than 3 Inlet/Outlet is highly discouraged); All Consumers inside the DMA Boundary are mapped and connected to billing data; can be called as Structured DMA.

Monitored DMA: A DMA where NRW is calculated as per IWA Water Balance, Consumer Survey is complete, unauthorized consumption is estimated, meter error is accounted for,

daily monitoring of Flow, Pressure at inlet and critical pressure point, Water Quality is regularly monitored.

Established DMA: A DMA where water is supplied with acceptable pressure in inlet and critical pressure point, regularly monitored Water Quality is Ok, most of the consumption volume is Billed Metered Volume (Consider 95% initially), unauthorized consumption is reduced next to zero by placing temporary meters and moving it to Unbilled Metered Volume, Water Loss is estimated from IWA Water Balance and compared with Known Water Loss to get fraction of Unknown Water Loss, and system is rehabilitated if required to bring down NRW to acceptable level (Consider 15% initially). Ultimately NRW is regularly monitored to ensure system issues are highlighted based on Water Loss Estimation, and proactive system improvements can be planned.

7.4 Objective of Contract

The key objective of the contract is to develop Non-Revenue Water (NRW) reduction strategy in 102 DMAs in increasing the awareness to recognize the importance of implementing the reduction program. The contract involves collection, collation and analysis of existing water services data. This shall be followed by developing a strategy for implementing a sustained NRW reduction program by improving the performance of water utility management through a structured program of technical, financial and management actions and costing the program as well as recommending an appropriate method of implementation.

7.5 Improvement Works in Progress regarding DMAs in DJB

Japan International Cooperation Agency (JICA) conducted a detailed contract on Improvement of water supply system in Delhi for the Master Plan 2021 and submitted its reports in September 2011. JICA proposed creation of District Metering Areas (DMA)'s for reduction of NRW. As per JICA report, DJB's network was proposed to be sub divided in 1010 DMAs.

As per JICA report of 2011, entire DJB network is proposed to be subdivided into a total of 1010 DMAs out of which 82 DMAs fall in three PPP areas, 170 in Chandrawal & 160 DMAs in Wazirabad WTPs command areas respectively. Remaining 598 DMAs are to be done by in-house by DJB.

In 1st Phase, 102 DMAs have been selected by zonal staff for Pilot project, but these may not represent the DMAs boundaries as per JICA report, due to technical reasons. The instant work of Consulting Agency will be limited to these 102 DMAs. The numbers may increase/decrease as per the actual site conditions/technical feasibilities.

Earlier, DJB engaged, Consultant (Hydraulics) & Consultant (GIS) for adding latest work specific software capabilities, hydraulic modeling and to form DMAs in coordination with Engineering and Revenue wings of DJB. As the creation of DMAs is specialized job, support of consulting agency is sought through this RFP, to work on DMA project by in house consultancy.

So far, the boundaries and network of 102 DMAs have been affirmed by the concerned divisions by "walk the line" survey. Mechanical flow meters have been installed in these DMAs. The Digitization/Consumer mapping of 39 DMAs (out of 102) have been completed by the Consultant (GIS)/Revenue wing. Monitoring of NRW of these 39 DMAs have been started. Out of these 39 DMAs, 18 DMAs have been shortlisted for establishment. The hydraulic modeling of 18 DMAs has been done by the Consultant (Hydraulics) and the estimates for the rehabilitation work of 10 DMAs have been prepared by concerned divisions (Civil) with the consent of Consultant (Hydraulics), to reduce the NRW.

The work of hydraulic modeling of remaining 84 (102-18) DMAs and work of rehabilitation of remaining 92 (102-10) DMAs for the establishment of 102 DMAs is therefore yet to be completed as till date none of the DMA, out of 102 has been established. So it is decided to outsource this work to consulting agency having expertise in this field, through RFP from the eligible empanelled agencies already shortlisted by MOUD.

NRW is being effectively monitored for 39 DMAs for last six revenue rounds i.e. last one year continuously and it is found that during the last two rounds, only about 8-10 DMAs out of 39 monitored were under 20% NRW range.

Therefore there is a requirement for engaging a consultancy firm at this stage for formation/establishment of nearly 102 DMAs including hydraulic modelling, preparation of Non Revenue Water reduction strategy and prepare action plan, implementation of action plan, preparation of detailed project report for Non Revenue reduction, suggest to prepare/plan detailed estimates for the rehabilitation works, etc. Therefore, it is required to carry out hydraulic studies in 102 DMAs.

7.6 Strategy for Calculation of NRW & Reduction of NRW

The Scope of Services during the planning, hydraulic modeling, leak detection works etc. period shall essentially comprise implementing the approved System Improvement Plan (SIP) from EE concerned, based on the hydraulic model prepared for water distribution as per DMA approach. SIP will be implemented in accordance to international best practice and industry standards and sufficient care shall be taken by the agency in minimizing supply interruptions, traffic disruptions in the Service Area. During work execution, agency would be required to inform the residents, say, of a particular street, well in advance about the type of work, inconvenience expected, timelines for various works, etc.

The Agency shall review previous studies and reports; interview the existing key staff in the service Area; line staff, and Agencys currently working on the distribution system in order to prepare a baseline report describing the water transmission and distribution system including water sources, boundary limits, storage, and supply zones; and their condition including pipe materials, dimensions, age, and condition; extent of Consumer water connections, meters and their operating condition; current estimated numbers of illegal connections.

Preparatory Surveys

i. Setting up a core "NRW Team": The first element of the strategy is to set up a core team for NRW control.

ii. Base Maps: The agency shall collect the base maps of 102 DMAs from the concerned EEs/mapping cell/DMA cell.

iii. Elevation Survey: The agency, on its own through or by outsourcing has to do elevation survey for finding depth of centre line of the pipe network in the DMAs, being considered for hydraulic modeling.

v. Network mapping: After preparing elevation survey map all data should be transposed as overlays using AutoCAD software on the network map of DJB. A complete set of network maps covering the entire area of supply should be built up. All data regarding pipes locations, valve chambers etc. shall be shared by DJB, still however if consulting agency has any doubt regarding its accuracy then agency shall seek help from DJB for revalidating the required details. Prior to hydraulic modelling the agency shall have to validate the data required for

hydraulic modelling so that accurate hydraulic modelling may be carried out. The responsibility of data accuracy shall lie with the agency and DJB shall not be responsible for any inaccuracy in data.

vi. Setting up a GIS: Agency shall be capable of utilising the data captured by Metre readers of DJB on their hand held tabs which capture coordinates and readings simultaneously, or those of manual meter reader's diaries. The network maps described in the previous section will be used as the basis of the GIS. The GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

Hydraulic Modelling

Hydraulic modeling: This is required to simulate the operation of the real network in all of its key elements. It contains the characteristics of the pipes, pumps, reservoirs, valves, customer consumption and leakage. The design is primarily for sizing of pipes for projected demand capacities. Hydraulic modeling is actually simulating the network for the current consumption pattern and current level of leakage which is developed through an iterative simulation process duly capturing the flow and pressure data of the current network functioning scenario.

When the network has been properly calibrated, it enables the current operation of the network to be fully understood, identify anomalies and most importantly optimize the design of any modifications to the configuration of the network before they are created in the field, thus assuring pipes are correctly sized and avoiding customer complaints.

DMA Establishment: The network should be sub-divided into District Metered Areas (DMAs) supplied by a limited number of key mains, on which flow meters are installed. In this way it is possible to regularly quantify the leakage level in each DMA so that the leakage location activity is always directed to the worst parts of the network and provide a permanent leakage control system. The DMA should be set up and managed in accordance with the IWA "District Meter Areas – Guidance Notes" of February 2007. This document provides a comprehensive manual for setting-up and for maintaining DMAs.

Reducing Real Loses

Leak detection and repair within the DMAs: Normal sounding investigations or those with latest technologies will be required in the DMA to locate any major leaks on pipes or

connections. Leaking service connections will be entirely replaced, including the pipe saddle, with the MDPE pipes & fittings. The NRW team will identify the connections for replacement and prepare the replacement plan. When the replacement work in a DMA is finished, a night flow test will be carried out to quantify any reduction in non-revenue water directly due to connection replacement. Latest state of the technology method of leak detection as applicable in most reputed cities of the world and applicable in ground conditions of Delhi City shall be tried to implement in DMAs after thorough studies of its advantages and disadvantages.

Pipe and connection replacements: (Works to be carried by DJB) House Service Connections (HSCs) replacement will be the first NRW reduction strategy to be carried out in DMAs because it is expected that there will be many leaks on the connections, often at the tapping point. The location and repair of these leaks will result in a reduction of real losses but also will eliminate many leak noises that will then facilitate location of any pipeline bursts in the DMA.

NRW Monitoring

Network monitoring and management: Following the implementation of NRW Control program in each DMA, a period of monitoring and maintenance of the reduction that has been achieved will begin. The point at which the next intervention will take place will be determined individually for each DMA. For each DMA, an intervention level for losses will be set and whenever this level is reached due to the natural rate of rise of leakage, a leak detection and repair exercise will be carried out to bring the NRW level back down to the original baseline or exit level. The long term average NRW level for each DMA will lie between the intervention and exit levels that are set. This concept of regular intervention into each DMA determined by the setting of intervention and exit levels will ensure sustainability of the NRW targets over a long period of time.

7.7 TERMS OF REFERENCE (TOR)

MAJOR SCOPE OF WORK:

The agency shall have to execute the following four major works for the reduction of NRW %age to the specified limit of 15% as per CPHEEO standards:

1. Leak detection (Real losses)
2. Hydraulic Modeling.
3. Elevation Survey
4. Technical assistance to prepare the rehabilitation estimates
5. Monitoring of Rehabilitation work

The scope of work for these activities has been enumerated below in the detailed scope of work.

SUMMARY OF SCOPE OF WORK

1. DMA identification
2. Network marking and mapping
3. Consumer Mapping
4. Feasibility of formation of DMA and submission of Inception Report
5. Identification of critical points and installation of pressure loggers & electro-magnetic flow meters, etc.
6. Verification of Data provided by DJB
7. Detection of Unauthorized water consumption (Apparent Losses)
8. Leak detection (Real losses)
9. Isolation of DMA
10. Leakage repair
11. Calibration of flow meters
12. Randomly testing of Consumer Water meters & Replacement of defective water meters
13. Collecting of flow meter data by making online data submission form.
14. Consumption of billed water and evaluate of unbilled consumption.
15. Checking/Verification of meter reading data provided by DJB.
16. If billed water consumption is less than 95%, prepare the strategy to achieve the target of 95% billing

17. NRW calculation – monthly
18. If NRW < 15% (CPHEEO Standards), then monitoring continuously.
19. If NRW > 15% (CPHEEO Standards)
    Hydraulic Modeling.
20. Technical assistance to prepare the rehabilitation estimates
21. Elevation Survey
22. Monitoring of Rehabilitation work
23. Submission of reports

DETAILED SCOPE OF WORK

1. DMA identification:

One of the main activities of this Contract is the Creation of 102 DMAs. The Agency has to confirm and define DMA boundaries actually on ground. If needed the Agency has to redefine the DMA boundaries. The total number of DMAs are 102 & the agency may re-structure the DMAs as per the site conditions. If the number of DMAs increase, due to restructuring, no extra payment shall be paid to the agency. If any/some of the given 102 DMA(s) are not feasible for establishment, then alternative DMA(s) shall be provided by DJB to the agency. Agency may revise the same as per site condition. Total area can be increased or decreased at sole discretion of DJB.

This activity shall start after first kick-off meeting which shall be held within one week of award of work. For work starting, the list of 102 DMAs shall be provided by DJB. Further, agency shall be required to obtain base maps from DJB and working on it in consultation with DJB zonal staff. The available GIS map shall have to be transferred on ArcGIS software's latest version available with the agency, as high quality base map of DMA is prerequisite towards good network mapping, hydraulic modeling and development of GIS. All DMAs should be identifiable on the basis of primary UGR which feeds the DMA considered for establishment

2. **Network marking and mapping:**

Network provided by the mapping cell and EE concerned shall have to be verified by the consulting agency such that the drawing shows complete and accurate positions of all the valves, flowmeters, Flushing Valves, dia. of pipe, material, age of pipes, direction of flow etc. If there is certain deficiency, the agency shall have to amend the same at its own level by doing the site survey along with the zonal staff. The network map's accuracy is the responsibility of the consulting agency, the pipes or other appurtenances need to be completely defined on network map and all the DMAs distribution network along with other details should be accurately put on GIS map.

3. Consumer Mapping:

Agency shall digitize all the HSCs/consumer data on GIS map in tie-up with area ZRO/revenue wing. Agency shall be capable of utilising the data captured by Meter readers of DJB on their Meter Reader Diary (MRD) manually, meter reading machine, and hand held tabs which also capture coordinates and readings simultaneously on GIS map. The network maps described in the previous section will be used as the basis of the GIS. Maps shall be prepared on the latest ArcGIS software version. The digitization 39 DMAs already been completed by in-house consultancy by DJB shall be shared with the agency.

4. Feasibility of formation of DMA and submission of Inception Report:

After completing the aforecited works, the agency shall again check feasibility, if the chosen DMA is feasible on ground or not, this may be because of topography, arrangement of valves, No. of Flow meters which should be preferably two , location of sites of national heritage, or some HSCs are being receiving the water from the particular DMA but fall outside the boundary of the DMA, or by any other unavoidable reasons and this is found that the creation of this particular DMA is not feasible the agency shall asked the EE Concerned to provide some other distribution network/area where the DMA can be formed and evaluated. But the payment for the works done in the rejected/ non feasible DMAs shall not be paid to the agency. Verification and finalization of DMA boundaries, locating of existing boundary valves, functioning and tightness checks of existing valves installed at the boundary of DMA, identification of location for additional valves to be installed, identification of locations where

the pipes will be disconnected and capped, location and installation details of new valves to be installed to defined the boundary of DMA. No consumer connection pipe shall cross a district boundary. If required, the agency shall have to do re-structuring, either by merging or by dividing the DMAs verify replacement of mechanical flow meters with electromagnetic flow meters.

5. **Identification of critical points and installation of pressure loggers & electro-magnetic flow meters, etc.**

Each DMA shall have a minimum 3 Critical Monitoring Points (CMPs) for continuous logging of pressure and CMPs shall be such that the highest and farthest point from the UGR/tapping point. The logging duration of data shall be hourly/5 minutes/15 minutes/daily as decided by the engineer-in-charge at his discretion. An important factor in lowering and subsequently maintaining a low level of leakage in a water network is pressure logging. The agency shall propose suitable data logger for pressure measurement. Whenever the pressure is found decreased at CMPs, it may indicate that there are some leakages in the relevant pipe line, which shall further help in easy and timely resolution of problem of leakage.

The Datalogger shall be a dual channel device capable of taking inputs for pressure. It shall be a battery based instrument with a minimum guaranteed battery life of 5 years with data transfer frequency of every 30 mins. or as per decision of engineer-in-charge. The minimum frequency of data logging shall be capable of at least 5 mins, preferably it should be without antenna. All the logged data should be transferred over GPRS using the data sim card to be proposed by the agency. The proposal must include all other charges to be paid to the manufacturer like cloud subscription charges, data usage charges to be paid to the service provider etc to ensure the working of the data loggers without inturreption. The agency shall only propose said loggers of cheap and best quality with international/national specification standards like ISO/BIS etc., final decision shall rest with engineer-in-charge depending upon site requirements, security etc. The agency shall continuously log pressure readings at pressure-metering points installed at Critical Measurement Points on the distribution network as approved by the client including a point where pressure is routinely experienced at the minimum level in Service Area and to measure and monitor pressured in intermittent water

supply on a daily basis in accordance with the common practice or as per the decision of engineer-in-charge.

Whereas these pressure loggers and electro-magnetic flow meters shall be installed by other agency to whom, DJB shall award the work separately for providing and installation of these items. The agency has the role for identification of CMPs, proposing point of installation, proposing suitable pressure loggers and ensuring their proper installation and functioning after installation and capture the data for the calculation of NRW and leakages etc.

6. **Verification of Data provided by DJB.**

Agency shall collect/request to DJB for data available with DJB regarding, distribution network/No. of HSCs/No, leakages & size and location of Flow meters/pressure loggers, pumping, pressure, UGR/direct feeding to the DMA, etc. The data provided to the agency from DJB does not absolve the agency from any responsibility of any of the activity required to be executed through the proposing the rehabilitation works for the hydraulic modeling, NRW reduction and creation/establishment of DMAs. The agency shall verify all the data provided by Delhi Jal Board for the accurate hydraulic modeling, and making strategies implementation other measures for the reduction of NRW.

7. Detection of Unauthorized water consumption (Apparent Losses):

Agency, in consultation with DJB's engineering and revenue wing's staff shall have to estimate location of unauthorized connections and suggest its prevention and removal or regularization. This detection of unauthorized consumption shall be done by using latest technologies available worldwide and any illegal connection emanating from or entering into DMA shall have to be located by the agency and to be informed to DJB staff for its authorization/disconnection. Decision of DJB in this regard shall be final and binding on agency. The technology proposed by the agency should be result oriented in ground condition of Delhi city.

The whole boundary of DMAs along with interiors locations should be travelled and surveyed along with the DJB staff with the Pipe Locator of latest technology, capable of locating plastic/CI/GI/DI pipes, for isolation of DMAs with the coordination with area EE/ZRO. The

agency shall report to Employer in respect of unauthorized water connections as soon as detected by the agency, on such intimation client shall undertake remedial actions by way of either regularizing the unauthorized connections or disconnecting such properties from the network within the Service Area or provide a meter on it.

8. Leak detection (Real losses).

The water supply system has leakages of several kinds both visible and invisible in nature. Most of the leakages are hidden in nature and locating them is a big challenge, which involves great deal of effort, time and labour, and many times it is not possible owing to several constraints. Several methods are available to detect these leakages like acoustic, smart ball, infrared radiation, and through Helium gas etc. In its efforts to provide efficient and reliable water supply in the city, DJB has initiated water supply pipeline leakage detection and reduction program to reduce physical loss of water through networks.

Pipeline Leaks if gone un-noticed for long time become one of the major reasons for physical loss of water, The focus of current work is to identify the visible/Invisible leaks and repairs thereafter in order to reduce physical Water Loss.

Type of leakages:

1. Leakage on transmission and/ or Distribution Mains: Water lost form leaks and breaks on transmission and distribution pipelines. These might either be small leaks that are not visible at the surface (e.g. leaking joints) or large breaks that were reported and repaired but did leak for a certain period before that and contribute therefore to the annual volume of physical losses in a particular year.
2. Leakage and Overflows at Utility's Storage Tanks: water lost from leaking storage tank structures or overflows of such tanks caused, for example , by operational or technical problems
3. Leakage on service connections up-to point of consumer metering: Water lost from leaks and breaks of service connections from (and including) the tapping until the point of customer use. In metered systems, this is the customer meter, in un-metered situations; this is the first point of use (Stop taps/tap) within the property. Leakage on service connections might sometimes be visible but will predominately be small leaks that don't surface and for a long periods (often years) .

Tasks: Following tasks are envisaged at this stage, however, bidder shall submit the detailed methodology and timeline for this activity.

(i) The technology adopted by the agency for leakage detection shall be such that, it identifies leakages locations accurately, with reliability and progress of work of leakage detection shall be fast.

(ii) After verifying the boundaries of DMAs, the agency shall deploy team to carry out preliminary study of the water supply system before taking up leak detection works and proposing the technology. The study shall cover the identification of inlet and outlets points to the area, source reservoir or trunk mains feeding the area, ground level and pumping stations in the area, supply timings and supply days.

(iii) The agency shall collect all the relevant pipe network drawings, GIS plans from the EE concerned/Mapping Cell/EE(DMA) to understand the network and supply system to be covered under the leak detection works before actual leak detection.

(iv) The Agency shall ensure it has all valid permits, licenses and registration to take up the scope of works under the Contract. For any permits required from government departments and agencies and from within departments of DJB, where assistance of DJB is required, the Agency shall inform the Executive Engineer concerned for such assistance in advance. The Executive Engineer concerned shall provide all necessary support to avail the permits for the works of leak detection.

(v) The Agency shall propose the locations/method of starting and concluding leak detection works in each DMA, to DJB a week in advance.

(vi) Agency shall inform DJB operations staff well in advance for enabling EE concerned to deploy his staff during the process of leak detection.

(vii) Agency shall take utmost care not to disturb/damage the system of water supply of DJB and other utilities while carrying out leak detection exercise.

(viii) Detection shall be done at every meter for at least two repetitions in each DMA; however this may be extended further if required in a particular DMA by the EE concerned. No extra payment for this work shall be paid.

(ix) The Agency shall do pinpointing of the leak on the road surface and mark it with yellow paint on the ground and shall give a serial number to it.

(x) Leak detection activity to be carried out by the best suitable latest technology/pressure management etc. by installing the pressure loggers at the inlets and by identifying the minimum 3 Critical monitoring points in each DMA and CMPs shall be such that the highest and farthest point from the command reservoir/pipe line. Now unusual pressure variation for finding prospective leakage shall be studied along the pipe length.

(xi) Daily data of pressure during the supply hours shall be obtained at inlet and CMPs, which will be helpful in judging occurrence of fresh leakage (if any) as and when it happens, due to loss of pressure at critical points.

(xii) Since there is intermittent supply system in most of the 102 DMAs selected for establishment, the agency shall have to, in most of the cases, undertake the leak detection work during supply hours/night hours (to avoid noise/disturbance and to maintain constant pressure) with the prior consent of EE concerned to make the arrangements for providing the supply at sufficient pressure for carrying out the leak detection work.

Agency shall on its own or by outsourcing the other external agency do the work of leakages detection to find out hidden leakages (Real Losses) in the distribution system in DMAs. Leaks shall have to be repaired by zonal staff of DJB, after the location of leakage has been accurately informed by the agency. In addition, the agency shall mark it on GIS map.

The scope of works also includes effective reduction of the water losses through continuous efforts during the entire operation period in order to promptly identify the existing leakages in the distribution network in the DMAs.

- Allowing using acoustic leak detectors during the night time, when background noise is lower,
- To have a better response of the acoustic systems through increased pressure in the network and related increased noise due to leakages,
- To evaluate the night water flow which is very strongly correlated to the leakage losses, the agency shall calculate NRW in a very systematic way at level of the DMAs. This activity will permit to ascertain the amount of water lost in the various components of the water supply system and to identify the zones, where the losses are more significant and above the level of acceptability. The agency shall then train zonal staff of DJB/LDI to identify the location of

leakage and inform zonal staff of DJB for carrying out the repairs on the identified leakages. The leakage detection activity will be directed towards the punctual identification of the water losses in those areas that are more critical as per the result of the NRW calculated. Repairs shall be done by DJB zonal staff.

Quarterly leakage modeling shall have to be done by the agency to identify weak links in the distribution system. Continuous monitoring of DMA inflow, pressure and minimum night flow. Leak detection surveys (using all kind of equipment and technologies, from simple sounding with a listening stick to leak noise co-relaters and leak noise loggers as appropriate, helium gas or any other new technology developed world wide to locate the exact location of hidden leakages), note that all required leak detection equipment has to be provided by the Agency. Leak detection surveys, repairs and pressure fine-tuning shall be repeated and/or shall continue until an acceptable level of leakage/water losses/NRW is achieved. The acceptable level of leakage might vary from one DMA to the other, it is up to the Agency to decide at which point the effort for further leakage reduction becomes prohibitively high, continuous flow and pressure data logging and data transfer to the central server establishment of the Target Night Flow Level (TNFL) in m3/h after completion of all water loss reduction activities in a DMA and continuous monitoring of inflow, pressure and minimum night flow to become aware of new leaks; and repeating of leak detection and repair should done if the minimum night flow exceed the tolerance limits. Agency shall have to arrange the required leak detection equipment.

A sufficient number of valves for future operation shall be provided for each DMA, in such a way to enable 4 or 5 steps for Step Test to be executed in leak detection campaigns in O&M period.

Payment for leakage identification works shall be done

a) The cost of Leak detection work shall be paid as per the weightage given at S. No. 8 of the activities specified in the Terms of Payments under the head, Planning, hydraulic modeling and leak detection etc. Cost. The weightage for the work of Leak detection is given as 8 out of total weightage of 23 to 23 activities. Hence the total payment for the leakage detection shall be (8/23)x60% of 60% of awarded Cost and it shall be for the total length of the distribution network existing in the 102 DMAs for the Leak detection works to be done at least two times (two repetitions)

b) Success rate for leak detection should be minimum 75% i.e. %age of leakage point suggested and actual leakage found should be minimum 75%. In case success rate is less than 75%, expenditure done by DJB on waste full pits shall be recoverable from the agency.

c) The payments towards works shall be payable every month as per approved rates and certified quantities of works completed as per the prescribed in para (a) above.

d) There shall be no separate payment for preliminary investigations. The total length of distribution system will be divided per division in proportion of the kilometre of pipelines in the respective DMA area and be payable after completion of the activity, by division. The amount for leakage detection will be paid per kilometre of detection completed as per terms of reference and in accordance to the methodology suggested by the Agency in its proposal and accepted by the DJB in technical evaluation of the proposal or after award of work. At the end of each month, for the leak detection works completed in the month, the Agency shall provide a updated map of the detected network in GIS format with co-ordinates with marking the pipeline detected for leaks in the respective cycle, location of detected leaks and leaks repaired. The kilometres of detection completed and shown in the map shall be checked by the DJB and be payable as per the performance of agency. The amount for digging of number of trial pits shall be included in leak detection only and no separate payment for this work shall be paid. The trial pits shall be required for the investigations of location of pipeline, size of pipeline, injection points, investigation of detected leaks if any.

Note: Agency shall have to bifurcate the percentage of NRW into real losses and apparent losses vide submitting the report of monthly NRW calculation to the concerned Executive Engineer.

9. Isolation of DMA:

The agency shall have to verify at site, the locations of all inlets and outlets for ensuring minimum number of Flow meters at inlet and outlets (if any). Ensuring complete isolation of DMA is necessary for correct determination of NRW. Then execution of Zero Pressure Test (ZPT) shall have to monitored by agency, whereas the test should be done by the DJB staff under the guidelines of consulting agency. Successful execution of zero-pressure test for

particular DMA shall be considered as completion of one phase and the agency shall then be liable to receive its performance based payment of 25% of performance cost depending upon number of DMAs completely isolated, on proportionate basis with the number of DMAs to be established by the agency.

Execution of zero-pressure-test and execution of all subsequent investigations and works be carried, should the first zero pressure- test have failed until the test is successfully performed and the DMA is isolated.

The agency shall finalise the boundaries of DMA while assessing the operational feasibility and proceed to isolate the same without affecting the adjoining areas for water supply. Agency shall be responsible to provide alternative arrangement for such affected areas, if any, for water supply. The agency shall, set up hydraulically isolated District Metered Areas (DMAs) within the Service Area/ operational zone of each UGR.

10. Leakage Repair:

All the leakages accurately detected and informed to the EE concerned by the Agency shall have to be repaired by the EE concerned and EE concerned shall informed the Agency after the repair of such leakages. Agency shall keep the record of leakage repair for all the DMAs.

11. Calibration of flow meters:

The calibration of flow meters shall be done by the department but the agency shall verify the accuracy of flow meter during the process of calibration at meter workshops and shall be fully responsible that the reading shown in the flow meter shall be accurate. Calibration of defected water meters shall be done as and when the fluctuation in the NRW observed/noticed by the agency and this shall immediately brought to the knowledge of the concerned EEs for the calibration of the such flow meters.

12. Randomly Testing of Consumer water meters & Replacement of defective water meters:

The Agency shall randomly get tested atleast 1% of total number of water meters in each billing cycle of 2 months from the agencies authorized by the DJB or with the Electronic meter testing devices enable to capture the consumption/pressure at site without removing the

meter or any other latest equipment/technology shall be used as per the approval of engineer-in-charge. The cost of all testing of the water meters shall be borne by the Agency. The observations/data shall be recorded. And if such testing reveals the relevant meter to be inaccurate by more than 2% or those meters which have gone beyond the accuracy limits specifies in ISO 4064, shall be replaced by DJB, option for which shall be taken in the rehabilitation estimate proposed by the Agency.

DJB shall own and maintain the HSC upto water meter in DMA areas for effective monitoring of DMAs/NRW. The target shall be achieved upto 95% billing.

13. Collecting the flow meter data by making online data submission form.

Agency shall be responsible to collect the data of consumption DMA wise from the ZROs/Revenue Wing/Wipro or any other agency hired by DJB, to assess the NRW on two-month basis, although the billing cycle is of two month. Agency shall be responsible to verify the volumetric consumption/readings of DMA consumers during the establishment of DMA / baseline study and also responsible for spot / random checking as when desired by DJB. If directed by DJB, the agency shall train the meter reader & meter inspector to use the latest equipment with latest technologies to capture the meter reading along with other necessary data like reading of water meter with its coordinates to easily digitize all the consumer location on GIS maps of DMA.

The Agency shall:

i. During DMA study, take readings from revenue wing of DJB and take stock of different types of consumers and assess their water consumption value in LPCD for each DMA

ii. Develop a monitoring program of random spot-checks to ensure the accuracy of the meters

iii. Develop and implement a plan; the intent of which is to ensure that:

a. All consumer meters are in working condition

b. all consumer meters are accurate,

c. all consumer meters are read,

d. all consumer meters are in suitable and possibly at easily approachable locations,

f. develop and implement a program to estimate consumption in circumstances where metering problems exist, and

g. provide advice as to methods to improve the meter reading process to ensure greater accuracy;

iv. Identify consumer meters which have not been read

The agency shall have to use its own methods and techniques to ascertain accuracy and reliability of data provided by the DJB.

14. Consumption of billed water and evaluate of unbilled consumption:

Agency will collect the volumetric consumption from the Revenue wing/WIPRO or any other agency hired by DJB for the accurate determination of NRW and also evaluate the unbilled consumption by doing the real survey of in and around the DMAs, if the DMA is being surrounded by the JJC/unauthorised market etc.

15. Checking/Verification of meterreading data provided by DJB:

Investigation of NRW due to accounting/meter reading errors and non-payment of bills can be carried out immediately as an immediate priority since they involve little cost in comparison to real investigation of technical losses and illegal connections. Accounting/meter reading errors can be reduced by setting simple systems which provide quality assurance on both the methodology and processes of water accounting and which provide checks on the meters which have been read.

The agency will randomly check the consumption recorded by Meter Reader/or recorded as Average billing. Agency shall test @10 % of the readings recorded by the MR/MI in MRD in every billing cycle and provide the comparison statement to the Nodal officer (Revenue)/EE(DMA) in a sealed envelope confidentially.

16. To achieve the target of 95% billing:

Agency will make strategy to achieve target of 95% billing by submitting the monthly report of unauthorised water connections, defective water meters, the sanctioned connections having no water meter.for the installation/replacement of water meters etc. for enabling, DJB to take necessary action.

17. NRW calculation – At the end of each billing cycle:

Agency shall made the NRW calculation by preparing the automatic software for doing so and submit its report to all the EE/ ZRO concerned and the other officers dealing/monitoring with DMAs on or before the 7th day from the date of end of every billing cycle.

18. If NRW < 15 % (CPHEEO Standards)

If NRW is less than the 15% (CPHEEO standards) there shall be no need of rehabilitation work in this phase. But if the NRW increased beyond the standard of CPHEEO, during the tenure of contract the consulting agency have to prepared strategies for the reduction of NRW by doing hydraulic modeling or by suggesting the rehabilitation work have to be done and further do the continuous monitoring to bring the NRW level back down to the original baseline or exit level.

This concept of regular intervention into each DMA determined by the setting of intervention and exit levels will ensure sustainability of the NRW targets over a long period of time.

19. If NRW > CPHEEO Standards

Hydraulic Modelling:

By doing hydraulic modeling, The Agency shall ascertain the necessity and the extent of Rehabilitation required.

The agency shall design water supply distribution network on DMA basis to ensure equitable, water supply at sufficient pressure to the Consumers by using the hydraulic model and simulating both, present (2018) and future (Year 2031) conditions,. Each DMA preferably have one inflow point and be isolated by installing valves / end plugs. DMA at entry point will be provided with a bulk flow meter.

Agency may suggest good management practices. Lessons learnt from other utilities/agencies will also be incorporated for better management services.

The Agency shall validate the Hydraulic Network Model (HNM) for water supply incorporating the variations as per actual site conditions. The HNM shall be built on contour maps of 1 m interval GIS map if found necessary by doing the elevation survey wherever required. The data pertaining to water supply infrastructure like, reservoirs, Pumping Stations, rising mains and distribution system, valves and demand allocations shall be obtained from

EEs concerned/mapping cell, consultants, field study and consumer survey captured on the network model using GIS and shall be verified before using in the network model.

For each DMA, the Agency shall apply hydraulic modelling as basis for verifying the optimum DMA design and determination of feeder main diameter.

Flow velocities should be less than or equal to 1.5 m/s. Pressures shall not be less than 12 psi and should not exceed 30 psi. The Agency can use the hydraulic model used by the DJB or may use Water Gems and transfer the results to the GIS system. The data pertaining to reservoirs, pipes, valves, HSCs and demand locations shall be included in the model.

A sufficient number of valves for future operation shall be provided for each DMA, in such a way to enable for tests to be executed in leak detection campaigns.

The complete detailed design of the each DMA thus verified shall be submitted to the Engineer for approval.

The hydraulic network modelling by using latest software shall be carried out by collecting the actual property wise water demand allocated to the nearest junction. Following broad guidelines may be followed during hydraulic modelling:

- The model shall be worked out by considering the domestic demand as 200 lpcd water supply and actual demand for apparant and industrial requirement.
- The DMAs which are still to develop where the present water requirement is quite less as compared to the design demand, the present scenario with existing water demand shall be run and the incoming flow shall be adjusted accordingly.
- The minimum pressure in the distribution network when full demand in the DMA is developed shall not be less than 14 psi at consumer connection point. The excessive pressure in the typical areas shall be managed using the appropriate pressure management techniques at distribution system level and other at the individual connection level.
- All new connections shall be marked on GIS map and captured as additional demand in the model and updated model.
- The hydraulic model shall be calibrated using set of observed data of pressure from sensors placed in distribution network at critical points of high and low pressures and flow from the consumer and bulk flow meters. The calibrated model shall be further validated using other set of live data. This validated model shall be used for the

operation and management and while making decision for giving new connections and branches and making rehabilitation plans. Validation of Hydraulic models as per actual site conditions The Agency shall use Water Gems software.

20. Elevation Survey:

The agency, on its own through or by outsourcing has to do elevation survey for finding depth of centre line of the pipe network in the DMAs, being considered for creation/establishment/hydraulic modeling wherever required. A detailed topographical survey, of the components involved as shown in the boundary limit, within the project area shall be carried out using Total Station equipment and the spot levels and the contours at 0.5 m interval shall be carried out &stored in editable digital format on the GIS base. Agency will survey all underground utilities located within the Sub Project Area up to 1.5 m depth and mark on GIS based maps. The agency must always make available an accurate leveling instrument at the site of work. Necessary levels will be given by the agency or his authorized site engineer and the same will be checked by the site staff of the department.

21. Technical assistance to prepare the Rehabilitation estimates Civil & E&M (if needed)

Agency shall have to provide technical assistance to the EE concerned for preparing rehabilitation plan/estimates as per in accordance with the hydraulic modeling done by the Agency and verify the estimates prepared by EE concerned.

HSCs presently being maintained by the consumers are the main cause of high NRW. As per the requirement all the HSCs in DMA areas should be replaced with new HSCs of MDPE pipe material also for future installations and O&M of HSCs in DMA areas shall be done by the DJB for effective monitoring of NRW. Also the old/outlived pipes shall be replaced with the DI pipes to minimize the water leakages and thereby minimizing real losses.

Disconnections of abandoned old connections and old House Service connections are very critical and the major cause of contamination hence these abandoned distribution system should be disconnected in a proper way. Agency will vet the estimates prepared by the DJB and agency shall verify include items of disconnection of old/outlived GI pipe House Service connections and replace the same with new MDPE pipes with compression fittings. All the

connections shifted from old to new system and new connections given shall be recorded on GIS based database duly attaching each connection with meter serial number to respective property with social and contact data of each consumer available in database. This database shall be of use to understand demand of water and also for servicing consumers. service connection replacement: it is anticipated that most of the service connections are leaking or are in bad condition and must be replaced. Detailed design, supply and installation complete with all fittings and road and sidewalk reinstatement are included. The Agency shall decide which connections shall be replaced but in any case, if a leak is found on any part of the service connection, the entire connection including the pipe saddle shall be replaced by the DJB with MDPE pipes and fittings.

The provision for the installation/replacement of defected water meter alongwith the require fittings and 2 year O&M inclusive of all HSCs in the DMAs shall also be the part of rehabilitation estimate.

22. Monitoring of Rehabilitation Works:

The Agency has to monitor the rehabilitation works required to achieve the main objective of the Contract and reduce water loss in DMA from source i.e. from UGR/direct tapping to the consumer End but the decision of EE concerned in this regard shall be final. The agency shall super wise subagencys and ensure enforcement of material and workmanship specifications. The capital works of rehabilitation shall be executed by the Department. The agency shall have to submit the monthly report regarding the progress of rehabilitation work to the Nodal Officers (Civil/E&M/Revenue) Appointed by DJB as well as to the concerned CEs/SEs/EEs.

23. Submission of reports:

Agency shall have to submit all the required Monthly Reports of all the works assigned to the agency and also the NRW calculation report prepared after every billing cycle and the final report regarding the targets achieved in reference to reduction of NRW achieved DMA wise and further strategies and its implementation plan.

7.8 Scope of work during O&M period

Achieving NRW target as per CPHEEO and Continuous monitoring of NRW during O&M period.

Agency shall have to achieve the target of reduction of NRW as per the standard prescribed by CPHEEO/MoUD either on the completion of rehabilitation work as proposed by the agency after the hydraulic modelling of the DMAs or finally till the completion of O&M period.

Actual O&M shall start from the date of completion of rehabilitation work in the concerned DMA and certificate in regard this has been issued by the EE concerned and information for the same has been given to the agency by the EE concerned. Agency shall be responsible for the continuous monitoring of the DMA/NRW to keep the reduction of NRW achieved after done all the rehabilitation works and by adopting other methodology.

Network monitoring and management: Following the implementation of NRW Control program in each DMA, a period of monitoring and maintenance of the reduction that has been achieved will begin. The point at which the next intervention will take place will be determined individually for each DMA. For each DMA, an intervention level for losses will be set and whenever this level is reached due to the natural rate of rise of leakage, a leak detection and repair exercise will be carried out to bring the NRW level back down to the original baseline or exit level. The long term average NRW level for each DMA will lie between the intervention and exit levels that are set. This concept of regular intervention into each DMA determined by the setting of intervention and exit levels will ensure sustainability of the NRW targets over a long period of time.

Following minimum activities comprising O&M works:

a. Updating GIS maps by marking new consumers in the prepared GIS map during capital works.
b. Keeping daily record of Pressure readings in the pressure loggers installed at the critical pressure points.
c. Flow monitoring
d. Checking of 10% meter readings taken by Meter readers as was during capital works

e. Reporting of all collected data to EE concerned
f. Standard operating procedures shall be formulated for each DMA
g. Prevention of any unauthorized connection
h. If any or more DMA(s) again cross the 15 % limit of NRW then agency shall have to do all activities e.g. ZPT test etc. as required to again bring the DMA to the NRW within permissible limits
i. Agency shall test at least 1% of total water meter installed during every billing cycle of 2 months.
j. Agency will prepare the online data submission form to capture the readings of flow meters and pressure and quality etc. and submit its report every month to the EE concerned for approval
k. Agency will collect the volumetric consumption from the Revenue wing of DJB for the accurate determination of NRW at the end of each billing cycle.
l. Active leakage control by regular survey and leakage monitoring in the zones or district metered areas, including real investigations (e.g. sounding sticks)
m. Monitoring Rehabilitation works and submit its observations on the quality and progress of works, each month
n. Regular meetings of the NRW forum to discuss and transfer best practice
o. Continued training and improvement in detection techniques
p. The agency shall provide all the finalised network, consumer maps and hydraulic modelling details in hard copy and soft copy to the DJB after completion of tenure of the O&M with the agency.
q. Agency will provide on the job training during operation services to the staff of client. Such trainings will be commenced in the last year of O&M period and before 90 days from the date of handing over the assets back to the client, the Agency shall organize detailed training to the identified staff in technical and revenue aspects of water services provision to enable the client to build sufficient capacity and skills to maintain the reduction in NRW, after the contract period
r. At least one meeting per month of Key expert in DJB Headquarter
s. Availability of Key experts and other non-key experts for achieving the targets of O&M period works

Joint inspection prior to contract completion

Not less than three months prior to the expiry date of the O&M period, the Employer's Representative and the Agency shall carry out a joint inspection of the Works and, within 28 days of the completion of the joint inspection, the Agency shall submit a report on the condition of the Works identifying maintenance works for reduction of NRW as mentioned above in scope of work during O&M period and other works required to be carried out to satisfy the requirements of the Operation and Maintenance Plan after the Contract Completion Date. The Agency shall submit a programme for carrying out such works over the remainder of the O&M period.

Following receipt of the Agency's report, the Employer's Representative may, throughout the remainder of the O&M Period, instruct the agency to carry out all or part of the works identified in the agency's report at agency's cost.

The consultant shall undertake following activities/tasks simultaneously with the details scope of work mentioned in above paras:

For the 39 DMAs already taken up in house by Delhi Jal Board (already available data will be shared with the successful agency)

- To study/improve/amend the DMAs already taken-up in-house by DJB, rehabilitation Plans of 18 DMAs out of selected 39 DMAs.
- Remodeling/Restructuring of balance DMAs out of selected 39 DMAs whose network & consumers have already been digitized/mapped.
- Help in framing estimation, technical bid evaluation
- Monitoring of rehabilitation works & obtaining NRW data and its monitoring.
- Stabilization of NRW within permissible limits always as per Central Public Health Engineering & Environment Organization (CPHEEO).

In furtherance to the above, the consultancy firm shall carry out the following tasks for the establishment of all 102 DMAs taken up in house by Delhi Jal Board.

1) To provide technical assistance to mark the boundaries of DMAs shortlisted (list enclosed) with sources of supply from UGRs /direct tapping on Google-earth (exiting available data will be shared by DJB).
2) To provide technical assistance to digitize all the water connections (authorized/unauthorized) along with the coordinates at GIS pertains to all

concerned revenue wings within each DMA persistently (data of existing digitized 39 DMAs will be shared for verification/updation).

(3) Survey of Project area, study and verification of isolation of network areas, suggest improvements/modifications, if necessary. Suggest additional Flow meters if necessary.

(4) To provide technical assistance to finalizing suitable leakage reduction strategy followed by leak detection surveys including house service connections upto meter (using any or all kind of equipment and latest technologies). Submission of Leakage Reduction Plan.

(5) To provide the detailed reports/rehabilitation plan for the calibration of flow meters if needed and to replace of leaking pipes or service connections, faulty Meters, Installation of Meters in Unmetered Connections. (Rehabilitation Plan for 18 DMAs already finalized will be shared for updation/improvement).

(6) To provide monthly leakage detection report,

(7) To provide technical assistance for Detection of illegal / unauthorized connections and installation of service connections & meters after regularization of water connection by DJB.

(8) Survey of project area to provide technical assistance within each DMA.

a) To verifying/provide technical assistance for finding exact details of (i) pipe network, (ii) pipe diameter, (iii) pipe material, (iv) Friction Factor, (v) flow measurement, (vi) pressure measurement, (vii) quality of water, (viii) age of pipe, (ix) Leakages, (x) Unauthorised connections, etc. for hydraulic modeling (wherever required) for preparation of Rehabilitation Plans for reduction of NRW.

b) To provide technical assistance to install auto water quality meters on the water tap for continuous monitoring of residual chlorine density.

c) To provide technical assistance to install the field sensors to capture the data of pressure/flow of water etc. electronically.

d) To prepare implementation plan to assess Non-Revenue Water (NRW) and develop strategies for reduction of NRW.

(9) Continuous monitoring of flow and pressure and weekly summary of flow and pressure statistical report and monthly Consumption and Water Loss Report.

(10) NRW shall be less than 15% with documentary proof.

(11) To provide technical assistance for the continuous calculation of NRW and preparing the monthly report on reduction of NRW

(12) To provide technical assistance for mapping the command area of each UGR/direct tapping pertaining to 102 DMAs.

(13) To take representative samples of existing water pipeline judicially for assessing friction factor of the inner pipe lining and assessment of any blockages in the distribution system required for hydraulic modeling/rehabilitation work

(14) Each DMA should be monitored continuously for the reduction of NRW as per CPHEEO/MoUD standards.

(15) Role of water supply thorough tankers to be considered while calculating NRW.

Continuous monitoring, submitting month-wise NRW report and prepare further strategies for the reduction of NRW till the completion of O&M period.

Agency shall submit the monthly report of NRW/detected leakage etc. to the EE concerned and to prepare for the further for reduction of NRW till the completion O&M period.

7.9 Expertise and Inputs

The contract period will be 18+24 months. The team should be able to demonstrate the qualifications and experience as prescribed in table below:

7.9.1 Core Team

Position	Minimum Qualifications	Experience
Team Leader	Graduate in Civil Engineering with Post Graduation in PHE / Environment Engineering or equivalent.	• 10 Years' professional experience in establishment of DMAs, and reduction of NRW, hydraulic modelling in the city having 5 Lakhs population for the • Experience in Operation & Maintenance of Urban Water Supply schemes.
NRW Management / Leak Detection Specialist	Graduate in Civil Engineering with specialisation in public health engineering/ Environment Engineering or equivalent.	• 10 Years' professional experience. in performance based NRW reduction is a strong preference • Hands-on leak detection experience • Familiar with all types of latest leak detection equipment/ technologies available in the world now a days (invasive and non-invasive) also including noise logger.

Other Staff (CV not to be evaluated)	The Consultant may propose appropriate staff such as Support Engineer, Draughtsman, Surveyor, computer operator, GIS expert. professional etc. as per the requirement of the work to complete in time frame manner.

Minimum Number of key experts and non-key experts proposed for work of "Hiring of consultancy firm for planning, hydraulic modeling, leak detection works etc. for reduction of NRW by formation of 102 DMAs, in phase-I in water supply network of DJB and its O&M for 2 years" during 18 months of planning, hydraulic modeling, leak detection works etc. and 2 years of O&M works shall be as under:

Key Experts required for planning, hydraulic modeling, leak detection works etc. for 18 months

S No.	Key Experts	Quantity	Duration	Qualification
1	Team Leader/NRW Management / Leak Detection Specialist	1	**18 months**	As per section 7.9 of RFP

Minimum Non-Key Experts proposed for planning, hydraulic modeling, leak detection works etc. for 18 months

S No.	Non-Key Experts	Quantity	Duration	Qualification
1	Hydraulic Modeler	1	3 months	Knowledge of Hydraulic modeling
2	GIS expert	1	18 months	Having studied course on GIS
3	Civil Engineer (Degree holder)	1	18 months	BE (Civil)
4	Civil Engineer Diploma Engineer	4	18 months	Diploma
5	Surveyor	3	6 months	ITI minimum having experience in elevation survey for 5 years in Delhi conditions
6	CAD Draughtsman	1	18 months	ArcGIS. Autocad knowledge
7	computer operator	2	18 months	Data entry, speed min. 30wpm
8	Meter Reader	6	18 months	Experience of taking water meter readings

Key Experts required for O&M period (for 24 months)

S No.	Key Experts	Quantity	Duration	Qualification
1	Team Leader NRW Management / Leak Detection Specialist	1	24 months	As per section 7.9 of RFP

Minimum Non-Key Experts proposed for planning, hydraulic modeling, leak detection works etc. for 24 months O&M period

S No.	Non-Key Experts	Quantity	Duration	Qualification
1	Diploma Engineer	2	24 months	Same as above
2	computer operator	2	24 months	--do--
3	Meter Reader	6	24 months	--do--

Note: List above is for minimum number of staff to be deployed by the agency, however agency shall deploy the staff over and above to perform his obligations as specified under this contract

Penalty: Penalty @ maximum 100 % of salary per month of the staff in addition to salary not payable, as quoted by the agency in its financial bid document shall be deducted from the payments of the agency, if any of the staff of the agency are found absent from his/her duty. The decision of the engineer-in-charge shall be final in this regard.

7.9.2 TA management and counterpart staff

The assignment will be contracted by the Delhi Jal Board for carrying out the assignment in Delhi City

7.10 Assistance to be provided by DJB

a. The DJB will nominate a Nodal Officer at the Executive Engineer Level who will coordinate with the consultant and other concerned executive engineer of the DMAs.
b. The (DJB) will Provide a Nodal officer (Senior Level Officer) to liaise with the Consultant and Zonal Officers and to provide the requisite data/information to the consultant.

c. Make best effort in providing data and information for carrying out study and recommendations that are not widely available in the public domain including map etc.

7.11 Items/Staff provided by the Consulting Firm

In addition to the results and deliverables listed above, the Consultant will provide:

a. All manpower, materials and equipment necessary carrying out the assignments.
b. All report production and transportation for travelling required for the Consultancy staff including Investigations.
c. Any other assistance require for the completion of the job as per scope of work.
d. Agency is supposed to have its various equipment or arrange equipment like Pipe locators, mobile generators, portable dewatering pumps, portable pressure loggers and flow meters, vehicles etc. Leak detection equipment shall be carried by agency or its agency to which the work of leak detctyion is outsourced.
e. Generators arranged by the agency for the work shall beoperated and maintained for use at his own cost during non-availability of power. It shall be agency's responsibility to obtain approvals & permissions from any statutory authority in accordance with the statutory rules & regulations.

SECTION 8. Work schedule and planning for deliverables:

8.1 The project is intended to be completed in 18 months and followed by 24 months of O&M works.

8.2 Planning, hydraulic modeling, leak detection works etc. / Performance work in 18 month :

The date of start of work shall commence as prescribed in the work order and the agency have to do the work in the 18 month-wise as specified in the table given below:

S No.	Activity	Role of Agency	No. of DMAs	Weigh tage of activity	Time frame
1	DMA identification	Verification of DMA prepared by EE Concerned. Restructuring if required	**84**	**0.5**	From 1 to 2 months
2	Network marking and mapping	Verification of existing network of water distribution system	**84**	**0.5**	From 1 to 2 months
3	Consumer Mapping	Verification of digitization all HSCs on GIS map	**84**	**0.5**	From 1 to 3 months
4	Feasibility of formation of DMA, Confirmation of DMA boundaries and submission of Inception Report	Verify the feasibility of formation of DMA/Confirmation of DMA boundaries after Restructuring if required.	**84**	**0.5**	From 1 to 3 months
5	Identification of critical points and installation of pressure loggers & electronic flow meters, etc.	Identification of critical points and checking proper functioning.	**102**	**0.5**	From 1 to 3 months
6	Verification of Data provided by EE (Civil) & (E&M), LDI, Mapping Cell & CCR, WIPRO, Revenue etc.	Collection of data regarding leakages, pipe diameters, age of pipes etc. and its verification	**102**	**0.5**	From 1 to 18 months
7	Detection of Unauthorised water consumption (Apparent Losses)	Agency will trace the unauthorised/illegal consumption by using latest technology available worldwide, which should be applicable in Delhi condition	**102**	**0.5**	From 1 to 18 months
8	Leak detection to find out hidden leakages in distribution system (Real Losses)	Agency at its own or by outsourcing, the leak detection agency shall detect the exact location of hidden leakages and intimate to the EE concerned for its repair & its monitoring.	**102**	**8.0**	From 1 to 18 months

S No.	Activity	Role of Agency	No. of DMAs	Weightage of activity	Time frame
9	Isolation of DMA	The agency will carry out the ZPT test and to do the needful to isolate the DMAs	**84**	**0.5**	From 4 to 6 months
10	Leakage Repair	Monitoring of leakage repair work and keep the record of leakage attended by the zonal staff.	**102**	**0.5**	From 1 to 15 months
11	Calibration of flow meters	Verifying the accuracy of flow meter during calibration process .	**102**	**0.5**	From 1 to 18 months
12	Randomly testing of Consumer Water meters & Replacement of defective water meters	Agency shall test at least 1% of total water meter installed during every billing cycle of 2 months.	**102**	**0.5**	From 1 to 15 months
13	Collecting the Flow meter data by making online data submission form	Agency will prepare the online data submission form to capture the readings of flow meters and pressure and quality etc.	**102**	**0.5**	Every 2nd month till 18 months
14	Consumption of billed water and evaluate of unbilled consumption.	Agency will collect the volumetric consumption from the Revenue wing of DJB for the accurate determination of NRW at the end of each billing cycle.	**102**	**0.5**	Every 2nd month till 18 months
15	Checking/Verification of Meter Reading data provided by DJB and to verify unauthorised consumption in the construction works	The agency will randomly check the consumption recorded by Meter Reader in MRD/Average billing, @10 % of the no. of total consumer in every billing cycle and provide the comparison to the Nodal officer (Revenue)/DMA Cell. And the agency will detect the unbilled DJB water used in construction / unauthorized construction in coordination with the Revenue Wing.	**102**	**0.5**	From 1 to 18 months

S No.	Activity	Role of Agency	No. of DMAs	Weightage of activity	Time frame
16	To achieve the target of 95% billing	Agency will make strategy to achieve target of 95% billing by submitting the monthly report of unauthorised water connections, defective water meters for the installation/replacement of water meters etc. for enabling, DJB to take necessary action.	**102**	**0.5**	From 9 to 15 months
17	NRW calculation- bi-monthly	Agency shall make the NRW calculation by preparing the automatic software for doing so and submit its reports to all the concerned wings on monthly basis.	**102**	**0.5**	Every 2nd month till 18 months
18	If NRW < 15% CPHEEO Standards, then monitoring continuously	If NRW < 15 % (CPHEEO standards). Agency shall have to continuously monitor these DMAs also and prepare the strategies to keep the NRW within the CPHEEO standards.	**102**	**0.5**	From 1 to 18 months
19	Hydraulic Modeling, If NRW > 15% CPHEEO Standards.	If NRW > 15% (CPHEEO standards). Agency shall do hydraulic modelling with consent of EE concerned.	**84**	**3.0**	From 4 to 6 months
20	Elevation Survey	To do the complete Geographical survey before hydraulic modeling	**84**	**2.0**	From 4 to 6 months
21	Technical assistance to prepare the rehabilitation estimates	To provide technical assistance as per results of Hydraulic modeling in preparation of rehabilitation estimates	**84**	**0.5**	From 4 to 6 months
22	Monitoring of Rehabilitation work.	Agency shall Monitor all the Rehabilitation Works till its completion.	**84**	**0.5**	From 7 to 18 months

S No.	Activity	Role of Agency	No. of DMAs	Weightage of activity	Time frame
23	Submission of reports	Agency shall have to submit all the required Monthly Reports of all the works assigned to the agency and also the NRW calculation report prepared after every billing cycle and the final report regarding the targets achieved in reference to reduction of NRW achieved, DMA wise.	**102**	**0.5**	From 1 to 18 months

8.3 O&M period: 24 Months: Scope of work during O&M period

(I) Continuous Monitoring of NRW: During O&M period, Continuous monitoring submitting month-wise NRW report and prepare further strategies for the reduction of NRW and keep the NRW within the limits prescribed by the CPHEEO i.e. 15%, till the completion of O&M period of 24 months of 102 DMAs.

(II) The agency shall be eligible for payment of Fixed O&M fee which shall be paid in equal monthly installments and shall complete the following activities:

a. Updating GIS maps by marking new consumers in the prepared GIS map during capital works
b. Keeping daily record of Pressure readings in the pressure loggers installed at the critical pressure points.
c. Flow measurement and monitoring
d. Checking of 10% meter readings taken by Meter readers, till the completion of O&M period
e. Reporting of all collected data to EE concerned
f. Standard operating procedures shall be formulated for each DMA
g. Prevention of any unauthorized connection
h. If any or more DMA(s) again cross the 15 % limit of NRW then agency shall have to do all activities e.g. ZPT test etc. as required to again bring the DMA to the NRW within permissible limits

i. Agency shall test at least 1% of total water meter installed during every billing cycle of 2 months.

j. Agency will prepare the online data submission form to capture the readings of flow meters and pressure and quality etc. and submit its report every month to the EE concerned for approval

k. Agency will collect the volumetric consumption from the Revenue wing of DJB for the accurate determination of NRW at the end of each billing cycle.

l. Active leakage control by regular survey and leakage monitoring in the zones or district metered areas, including real investigations (e.g. sounding sticks)

m. Monitoring Rehabilitation works and submit its observations on the quality and progress of works, each month

n. Regular meetings of the NRW forum to discuss and transfer best practice

o. Continued training and improvement in detection techniques

p. The agency shall provide all the finalised network, consumer maps and hydraulic modeling details in hard copy and soft copy to the DJB after completion of tenure of the O&M with the agency

q. At least one meeting per month of Key expert in DJB Headquarter,

r. Availability of Key experts and other non-key experts for achieving the targets of O&M period works

SECTION 9.0 Mode/Terms of payments:

- Total consultancy fee shall be divided into 2 parts, i.e. (i) 60% in Capital works/rehabilitation period and (ii) 40% in O&M period.
- 60% in Capital works/rehabilitation period ***fee shall further be divided into two parts:***

(I) ***Planning, hydraulic modeling, leak detection works etc. Period fee (18 months):*** *@ 60% of fee during capital works period shall be paid* on *execution of 23 activities as per their weightages/activities completed in number of DMAs on pro-rata basis.*

(II) ***Performance Fee during Planning, hydraulic modeling, leak detection works etc. Works****: Performance fee @ 40% of capital works period fee:*

(i) *First payment of 25% of performance fee shall be paid on successful isolation of DMAs on pro-rata basis depending upon number of DMAs*

(ii) *The agency after the award of work shall take the data of supply/consumption of water from DJB and calculate the NRW %age of all the 102 DMAs after the completion of first billing cycle. Then the agency shall calculate the average %age of NRW of the DMAs which are having the NRW more than 15%, i.e. more than the CPHEEO standards. This average %age of NRW excluding the %age of NRW less than 15%, will become the base line for the agency for reduction of NRW in other remaining DMAs.*

(iii) *After the calculation of base value, the agency shall start the efforts to bring down the NRW by works of leakage detection, identification of unauthorized consumption etc. and isolation of DMAs. And after next billing cycle and continuously thereafter of base value calculation, the agency shall again calculate the %age of NRW of 102 DMAs and obtain the average %age of NRW again by excluding the DMAs which are having the NRW less than 15%. Whenever the agency is successful in achieving the target of reduction in average %age of NRW by 10%, less than the base value, the 25% performance payment shall be paid to the agency. It is pertinent to mention here that the reduced average %age of NRW by excluding the DMAs having NRW less than 15% shall then become the new base value for the next calculation of average NRW for the purpose of payment of performance cost*

(iv) *Next two payments of performance cost @ 25% shall be paid on the same criteria as above whenever the agency achieves the target of successful reduction in average NRW %age value by 5% further in respect of revised base value each time.*

The fee during *Planning, hydraulic modeling, leak detection works etc.* works, for the DMAs where activities are repeating, e.g. Reports submissions, verification of billed readings etc., the payment for those activities per DMA for that month shall be reduced by a fraction of repetitions. Total payment however shall not be reduced. The terms of payment for leakage identification work, unauthorized connections detection and survey work shall be separately as per the RFP.

The details of Mode/Terms of payment, penalties and month wise targets to be achieved are Annexed as Annexure-I.

The payment of Leak detection work shall be specified separately in the Chapter-7 at S No. 8 of Detailed scope of work.

- ***O&M Cost @ 40% of awarded cost, shall be divided into 2 parts:***

(I) *Fixed Payment @ 40% of the total O&M fee shall be paid in 24 equal installments, subject to that the agency shall continuously deploy the required strength of staff as decided at the time of award of work to accomplish the scope of work during O&M period.*

(II) *Performance based payment @ 60% of the total O&M cost shall be paid maximum of @. 60% of O&M cost/24, to the firm on pro-rata basis only for those DMAs out of 102 DMAs for which %age of NRW has been brought within the prescribed limit of CPHEEO i.e. 15%. If the firm by making effort and brings all the 102 DMAs within the limit of 15 % NRW, i.e. 60% of O&M cost/24 shall be paid. And if the number of such DMAs increase or decrease the payment shall be made on pro-rata basis only for those DMAs which are having the %age of NRW within the limit of 15% the balance payment for those DMAs which are having the NRW more than 15% in that particular month shall be forfeited and shall not be released.*

The agency shall submit monthly bills, complying with the accomplishments of targets of works as per the RFP, to the respective executive engineer. The engineer shall check the agency's monthly statements and certify within 21 days and payment shall be made to the agency within 3 months. No any interest on delayed payments to the agency (if any) shall be paid

Note: details of Mode/Terms of payment, penalties and month wise targets to be achieved are Annexed as Annexure-I

SECTION 10. Details/Infrastructure to be shared by DJB

10.1 Details shall be shared by DJB after award of work.

Customer Complaints

The agency may obtain the Complaints data from DJB, e.g. Leakages and Contamination reported/attended in last 2 years. Length of distribution system in the DMAs, No. of water

connections in the DMAs, Base map, Network map of distribution system of DMAs, details of consumers in DMAs, details of supply through UGRs/Booster Pumps/direct tapping and the data related to 39 DMAs collected so far by in-house consultancy, being monitored by DJB or any other information which is available with DJB in regard to establishment of DMAs.

Or any other data/details required for successful completion of all the mentioned activities mentioned at Section 8.0, to achieve the desire targets of reduction of NRW within the time limit provided to the consulting.

DJB shall provide office space of 150 sqft to the consultant for its official working.

TERMS OF PAYMENT

ANNEXURE-I

Total consultancy fee shall be divided into 2 parts, i.e. (i) 60% in planning, hydraulic modeling, leak detection works etc. (ii) 40% in O&M period.

Planning, hydraulic modeling, leak detection works etc. Cost

60% in planning, hydraulic modeling, leak detection works etc. period fee shall further be divided into two parts: (I) planning, hydraulic modeling, leak detection works etc. works Period fee (18 months): **@ 60% of fee during planning, hydraulic modeling, leak detection works** etc. works shall be paid on execution of 23 activities as per their weightages/activities completed in number of DMAs on pro-rata basis. (II) Performance Fee during planning, hydraulic modeling, leak detection works etc. Works: **Performance fee @ 40%** of planning, hydraulic modeling, leak detection works etc. works fee:

(i) First payment of 25% of performance fee shall be paid on successful isolation of DMAs on pro-rata basis depending upon number of DMAs

(ii) The agency after the award of work shall take the data of supply/consumption of water from DJB and calculate the NRW %age of all the 102 DMAs after the completion of first billing cycle. Then the agency shall calculate the average %age of NRW of the DMAs which are having the NRW more than 15%, i.e. more than the CPHEEO standards. This average %age of NRW excluding the %age of NRW less than 15%, will become the base line for the agency for reduction of NRW in other remaining DMAs.

(iii) After the calculation of base value, the agency shall start the efforts to bring down the NRW by works of leakage detection, identification of unauthorized consumption etc. and isolation of DMAs. And after next billing cycle and continuously thereafter of base value calculation, the agency shall again calculate the %age of NRW of 102 DMAs and obtain the average %age of NRW again by excluding the DMAs which are having the NRW less than 15%. Whenever the agency is successful in achieving the target of reduction in average %age of NRW by 10%, less than the base value, the 25% performance payment shall be paid to the agency. It is pertinent to mention here that the reduced average %age of NRW by excluding the DMAs having NRW less than 15% shall then become the new base value for the next calculation of average NRW for the purpose of payment of performance cost

(iv) Next two payments of performance cost @ 25% shall be paid on the same criteria as above whenever the agency achieves the target of successful reduction in average NRW %age value by 5% further in respect of revised base value each time.

The fee during planning, hydraulic modeling, leak detection works etc. for the DMAs where activities are repeating, e.g. Reports submissions, verification of billed readings etc., the payment for those activities per DMA for that month shall be reduced by a fraction of repetitions. Total payment however shall not be reduced. The terms of payment for leakage identification work, unauthorized connections detection and survey work shall be separately as per the RFP.

Penalty: In case the agency failed to achieve the assigned targets/activities as per finalised Bar Chart/Terms of Payment schedule, a penalty @ 5% of the cost of that activity for that particular month shall be deducted from the bills of agency and which shall not be reimbursable.

S.No.	Activity	Role of Agency	DMA Set0I (10 DMA)	DMA Set0II (8 DMA)	DMA Set0III (21 DMA)	DMA Set0IV (63DMAs)	Total No. of activity	No. of DMAs	Weighatage	1st month	2nd Month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month	13th month	14th month	15th month	16th month	17th month	18th month	Total Payment	Payment during each month	Penality w.e.f.	Penalty during each month
1	DMA identification	Verification of DMA prepared by EE Concerned. Restructuring if required	0	0	1	1	2	84	0.5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5th Month	
2	Network marking and mapping	Verification of existing network of water distribution system	0	0	0	1	1	84	0.5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6th Month	
3	Consumer Mapping	Verification of digitization all HSCs on GIS map	0	0	0	1	1	84	0.5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6th Month	
4	Feasibility of formation of DMA, Confirmation of DMA boundaries and submission of Inception Report	Verify the feasibility of formation of DMA/Confirmation of DMA boundaries after Restructuring if required.	0	0	1	1	2	84	0.5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6th Month	
5	Identification of critical points and installation of pressure loggers & electronic flow meters, etc.	Identification of critical points and checking proper functioning.	1	1	1	1	4	102	0.5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6th Month	
6	Verification of Data provided by EE (Civil) & (E&M), LDI, Mapping Cell & CCR, WIPRO, Revenue etc.	Collection of data regarding leakages, pipe diameters, age of pipes etc. and its verification	1	1	1	1	4	102	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0		7th Month	

7	Detection of Unauthorised water consumption (Apparent Losses)	Agency will trace the unauthorised/illegal consumption by using latest technology available worldwide, which should be applicable in Delhi condition	1	1	1	1	**4**	**102**	**0.5**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0		7th Month	
8	Leak detection to find out hidden leakages in distribution system (Real Losses)	Agency at its own or by outsourcing, the leak detection agency shall detect the exact location of hidden leakages and intimate to the EE concerned for its repair & its monitoring.	1	1	1	1	**4**	**102**	**8**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0		7th Month	
9	Isolation of DMA	The agency will carry out the ZPT test and to do the needful to isolate the DMAs	0	0	1	1	**2**	**84**	**0.5**	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9th Month	
10	Leakage Repair	Monitoring of leakage repair work and keep the record of leakage attended by the zonal staff.	1	1	1	1	**4**	**102**	**0.5**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0		7th Month	
11	Calibration of flow meters	Verifying the accuracy of flow meter during calibration process .	1	1	1	1	**4**	**102**	**0.5**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0		7th Month	
12	Randomly testing of Consumer Water meters & Replacement of defective water meters	Agency shall test at least 1% of total water meter installed during every billing cycle of 2 months.	1	1	1	1	**4**	**102**	**0.5**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0		7th Month	
13	Collecting the Flow meter data by making online data submission form	Agency will prepare the online data submission form to capture the readings of flow meters and pressure and quality etc.	1	1	1	1	**4**	**102**	**0.5**	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0		7th Month	
14	Consumption of billed water and evaluate of unbilled consumption.	Agency will collect the volumetric consumption from the Revenue wing of DJB for the accurate determination of NRW at the end of each billing cycle.	1	1	1	1	**4**	**102**	**0.5**	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0		7th Month	

15	Checking/Verification of Meter Reading data provided by DJB and to verify unauthorised consumption in the construction works	The agency will randomly check the consumption recorded by Meter Reader in MRD/Average billing, @10 % of the no. of total consumer in every billing cycle and provide the comparison to the Nodal officer (Revenue)/DMA Cell. And the agency will detect the unbilled DJB water used in construction / unauthorized construction in coordination with the Revenue Wing.	1	1	1	1	**4**	**102**	**0.5**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0		7th Month	
16	To achieve the target of 95% billing	Agency will make strategy to achieve target of 95% billing by submitting the monthly report of unauthorised water connections, defective water meters for the installation/replacement of water meters etc. for enabling, DJB to take necessary action.	1	1	1	1	**4**	**102**	**0.5**	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0			
17	NRW calculation-bi-monthly	Agency shall make the NRW calculation by preparing the automatic software for doing so and submit its reports to all the concerned wings on monthly basis.	1	1	1	1	**4**	**102**	**0.5**	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0			
18	If NRW < CPHEEO/MOUD Standards, then monitoring continuously	If NRW < 15 % (CPHEEO standards). Agency shall have to continuously monitor these DMAs also and prepare the strategies to keep the NRW within the CPHEEO standards.	1	1	1	1	**4**	**102**	**0.5**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0		7th Month	
19	Hydraulic Modeling, If NRW > 15% CPHEEO Standards.	If NRW > 15% (CPHEEO standards). Agency shall do hydraulic modelling with consent of EE concerned.	0	0	1	1	**2**	**84**	**3.0**	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9th Month	
20	Elevation Survey	To do the complete Geographical survey before hydraulic modeling	0	0	1	1	**2**	**84**	**2**	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9th Month	

21	Technical assistance to prepare the rehabilitation estimates	To provide technical assistance as per results of Hydraulic modeling in preparation of rehabilitation estimates	0	1	1	1	**3**	**84**	**0.5**	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0		9th Month	
22	Monitoring of Rehabilitation work.	Agency shall Monitor all the Rehabilitation Works till its completion.	0	0	1	1	**2**	**84**	**0.5**	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0		12th Month	
23	Submission of reports	Agency shall have to submit all the required Monthly Reports of all the works assigned to the agency and also the NRW calculation report prepared after every billing cycle and the final report regarding the targets achieved in reference to reduction of NRW achieved, DMA wise.	1	1	1	1	**4**	**102**	**0.5**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0		7th Month	
									23																			0			
	Note#1: "0" means this activity is not to be executed by the consulting firm																																
	Note#2: "1" means, this activity is to be executed by the consulting firm																																
	O&M COSTS																																

O&M Cost @ 40% of awarded cost, shall be divided into 2 parts: .

Fixed Payment @ 40% of the total O&M fee shall be paid in 24 equal installments, subject to that the agency shall continuously deploy the required strength of staff as decided at the time of award of work to accomplish the scope of work during O&M period.

(II) **Performance based payment @ 60% of the total O&M cost** shall be paid maximum of @. 60% of O&M cost/24, to the firm on pro-rata basis only for those DMAs out of 102 DMAs for which %age of NRW has been brought within the prescribed limit of CPHEEO i.e. 15%. If the firm by making effort and brings all the 102 DMAs within the limit of 15 % NRW, i.e. 60% of O&M cost/24 shall be paid. And if the number of such DMAs increase or decrease the payment shall be made on pro-rata basis only for those DMAs which are having the %age of NRW within the limit of 15% the balance payment for those DMAs which are having the NRW more than 15% in that particular month shall be forfeited and shall not

The O&M fee shall be paid on monthly basis @ total O&M cost/18 equal installments, starting from the completion of one calender month from the date of completion of Capex Works cettifie

S.No.	Activity	Role of Agency	DMA Set0I (10 DMA)	DMA Set0II (8 DMA)	DMA Set0III (21 DMA)	DMA Set0IV (63DMAs)	Total No. of activity			19th month	20th month	21st month	22nd month	23rd month	24th month	25th month	26th month	27th month	28th month	29th month	30th month	31st month	32nd month	33rd month	34th month	35th month	36th month				42nd month
24	Continuous Monitoring of NRW	During O&M period, Continuous monitoring submitting month-wise NRW report and prepare further strategies for the reduction of NRW and keep the NRW within the limits prescribed	1	1	1	1	**4**	**102**		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				

						ANNEXURE-II	
LIST OF 102 DMAs SELECTED FOR IN HOUSE ESTABLISHMENT							
S No.	**DMA ID**	**Chief Engine**	**SE**	**EE**	**DMA Area Name**	**Connections No.**	**Length of Water pipe lines**
1	**DMA001**	CE(East)	SE(East)	East-I	Mayur Vihar 1	3620	12500
2	**DMA002**	CE(East)	SE(East)	East-I	Pocket-1, Mayur Vihar	1531	7000
3	**DMA003**	CE(East)	SE(East)	East-II	Ashoka Niketan Manak Vihar Shrestha Vihar Vigyanlok Jagriti Enclave Ph-III	1094	3000
4	**DMA004**	CE(East)	SE(East)	East-II	B,C&D Block Surajmal Vihar	1487	4840
5	**DMA005**	CE(C/N)	SE(North)	North-I	Hudson Lane	1409	5036
6	**DMA006**	CE(C/N)	SE(North)	North-I	Nehru Vihar	2154	6925.1
7	**DMA007**	CE(C/N)	SE(North)	North-II	Sanjay Enclave	664	2196
8	**DMA008**	CE(C/N)	SE(North)	North-II	Jahagirpuri	2052	5834
9	**DMA009**	CE(East)	SE(North-East)	North East-I	LIG MIG Flats Loni Road	1992	---
10	**DMA010**	CE(East)	SE(North-East)	North East-I	GTB Enclave Janta flats	3194	---
11	**DMA011**	CE(East)	SE(North-East)	North East-II	B1 to B5- Block Yamuna Vihar	2038	10660
12	**DMA012**	CE(East)	SE(North-East)	North East-II	C1 to C10- Block Yamuna Vihar	4467	20960
13	**DMA013**	CE(East)	SE(North-East)	North East-III	C-11 & C-12 Yamuna Vihar	723	---
14	**DMA014**	CE(East)	SE(North-East)	North East-III	GautamPuri	1052	---
---	**DMA015**	CE(West))	SE(North-West)	North West-I	Pkt. F-23. C-12, B-10, A-1 Block of Sec-3 Rohini	758	---
---	**DMA016**	CE(West))	SE(North-West)	North West-I	F-25. H-33 Blocks of Sec-3 Rohini & Pkt B-6, B-8 of Sec-4 Rohini	564	---
15	**DMA017**	CE(West))	SE(North-West)	North West-II	Divya Jyoti Apartment	524	1458
16	**DMA018**	CE(West))	SE(North-West)	North West-II	F,G,H Sector-11 Rohini	2550	11810
17	**DMA019**	CE(West))	SE(North-West)	North West-III	AC- Block Shalimar Bagh	885	4188
18	**DMA020**	CE(West))	SE(North-West)	North West-III	Tarun Enclave	749	2550
19	**DMA021**	CE(South)	SE(South)	South-I	B&C Block Vasant Kunj	1463	---
20	**DMA022**	CE(South)	SE(South)	South-I	D1,D2 Block Vasant Kunj	1030	---
21	**DMA023**	CE(South)	SE(South)	South-II	Sidharth Extension	937	3305
22	**DMA024**	CE(South)	SE(South)	South-II	Giri Nagar	1220	---
23	**DMA025**	CE(South)	SE(South)	South-IV	Sarita Vihar ABC	2057	---
24	**DMA026**	CE(South)	SE(South)	South-IV	Sarita Vihar KL Block	849	---
25	**DMA027**	CE(South)	SE(South-West)	South West-III	Hauzkhas	1615	4360
26	**DMA028**	CE(South)	SE(South-West)	South West-III	Munirka	1615	7300
27	**DMA029**	CE(West))	SE(West)	West-I	Red MIG Rajouri garden	1097	4250
28	**DMA030**	CE(West))	SE(West)	West-I	Vikrant Enclave	1088	4150
29	**DMA031**	CE(West))	SE(West)	West-II	Punjabi Bagh Extn	1141	7550
30	**DMA032**	CE(West))	SE(West)	West-II	Paschimpuri	2181	9950
31	**DMA033**	CE(West))	SE(West)	West-III	C-Block Vikaspuri	1856	
32	**DMA034**	CE(East)	SE(East)	East-I	A,B,C & D Block, Anand Vihar	2918	9140
33	**DMA035**	CE(East)	SE(East)	East-I	I, J & K Pocket Dilshad Garden	2086	6000
34	**DMA036**	CE(East)	SE(East)	East-I	Gagan Vihar	1192	4100
35	**DMA037**	CE(East)	SE(North-East)	North East-I	DDA Flats Mansarovar Park		---
36	**DMA038**	CE(East)	SE(North-East)	North East-I	Tahirpur village & E, F Pocket GTB Enclave	120	---
37	**DMA039**	CE(East)	SE(North-East)	North East-I	C-1 to C-3 Block, Nand Nagari & School Block Nathu Colony	411	---
38	**DMA040**	CE(East)	SE(North-East)	NE2	Gamri Extn.	341	10550
39	**DMA041**	CE(East)	SE(North-East)	NE2	Brij Puri	163	9200
40	**DMA042**	CE(East)	SE(North-East)	NE2	Khajuri Khas (A to E Block)	---	23960
41	**DMA043**	CE(East)	SE(North-East)	NE3	B&D Block Azad Nagar	---	---
42	**DMA044**	CE(East)	SE(North-East)	NE3	West Baberpur	---	---
43	**DMA045**	CE(East)	SE(North-East)	NE3	New Zafrabad (DDA colony)	---	---
44	**DMA046**	CE(West))	SE(North-West)	NW1	G-27, G-29 Sec-3 Rohini	657	4640
45	**DMA047**	CE(West))	SE(North-West)	NW2	C&D Blk Sec-18 Rohini (Millenium and Green	760	1918
46	**DMA048**	CE(West))	SE(North-West)	NW2	E-3 BLK, Sec-18, Rohini (Paradise Apt)	630	1787
47	**DMA049**	CE(West))	SE(North-West)	NW2	E-2 BLK, Sec-18, Rohini(Asthakunj)	448	1472
48	**DMA050**	CE(West))	SE(North-West)	NW3	SFS Flats Ashok Vihar, Ph-IV	862	3691
49	**DMA051**	CE(West))	SE(North-West)	NW3	Kapil Vihar	397	1548
50	**DMA052**	CE(West))	SE(North-West)	NW3	A-3 Blk, Paschim Vihar	851	2776
51	**DMA053**	CE(South)	SE(South)	S4	A, B & C Block, New Friends Colony	1901	---
52	**DMA054**	CE(South)	SE(South)	S4	Pkt – A/8 Kalkaji	416	---
53	**DMA055**	CE(South)	SE(South)	S4	Pkt –A/14 Kalkaji	387	---

54	**DMA056**	CE(South)	SE(South-West)	SW3	Sector-8 R.K. Puram	1323	---
55	**DMA057**	CE(South)	SE(South-West)	SW3	Sector-9 R.K. Puram	877	---
56	**DMA058**	CE(South)	SE(South-West)	SW3	Sector-12 R.K.	1113	---
57	**DMA059**	CE(West))	SE(West)	W2	Part of East Punjabi Bagh from Road No.13, Kothi No. 1 to 2 East Avenue Road 27/13 to 1/31 East Punjabi Bagh	1200	6213
58	**DMA060**	CE(West))	SE(West)	W2	New M.I.G. Old M.I.G. L.I.G. Prasad Nagar	1178	3071
59	**DMA061**	CE(West))	SE(West)	W2	R- Block , New Rajender Nagar	911	4540
60	**DMA062**	CE(Central-N	SE(Central)	C1	Civil Line	---	4370
61	**DMA063**	CE(Central-N	SE(Central)	C1	L.G.House & Adjoining Area	---	8103
62	**DMA064**	CE(Central-N	SE(Central)	C1	Kashmiri Gate	---	3191
63	**DMA065**	CE(Central-N	SE(Central)	C1	Red Fort	---	1490
64	**DMA066**	CE(South)	SE(South)	S1	C-8 Vasant Kunj	855	---
65	**DMA067**	CE(South)	SE(South)	S1	C-6&7, Vasant Kunj	540	---
66	**DMA068**	CE(South)	SE(South)	S2	Sukhdev Vihar Pkt-A&B	814	---
67	**DMA069**	CE(South)	SE(South)	S2	Nizamudin East	863	---
68	**DMA070**	CE(South)	SE(South)	S2	Nehru Nagar	1404	---
69	**DMA071**	CE(South)	SE(South)	S3	Ganga Apptt.	72	---
70	**DMA072**	CE(South)	SE(South)	S3	N.R.I & Narmada	574	---
71	**DMA073**	CE(South)	SE(South)	S3	Aravil Apptt	364	---
72	**DMA074**	CE(South)	SE(South)	S3	Mandakini Enclave	612	---
73	**DMA075**	CE(South)	SE(South)	S3	Asiad Village	870	---
74	**DMA076**	CE(Central-N	SE(North)	N1	Indira Vihar Colony	1356	3551
75	**DMA077**	CE(Central-N	SE(North)	N1	Hakikat Nagar	557	2791
76	**DMA078**	CE(Central-N	SE(North)	N1	Mall Apartment	243	858
77	**DMA079**	CE(Central-N	SE(North)	N2	B&C Blk, Jahangir Puri	3735	9441
78	**DMA080**	CE(Central-N	SE(North)	N2	Vir Nagar, Jain Colony , Near R. P. Bagh	387	1643
79	**DMA081**	CE(Central-N	SE(North)	N2	DDA Flat Gulabi Bagh	566	3109
80	**DMA082**	CE(Central-N	SE(Central)	C2	Beri Wala Bagh	---	---
81	**DMA083**	CE(Central-N	SE(Central)	C2	Kishan Ganj	---	---
82	**DMA084**	CE(Central-N	SE(Central)	C2	Baghkare Khan	---	---
83	**DMA085**	CE(Central-N	SE(Central)	C2	Ashoka Pahari	307	---
84	**DMA086**	CE(Central-N	SE(Central)	C2	Inderlok, Tulsi Nagar DDA Flat	1279	---
85	**DMA087**	CE(West))	SE(North-West)	NW1	C-13,D-13, D-14,D-15 & H-34 Sec-3 Rohini	1483	6625
86	**DMA088**	CE(West))	SE(West)	W1	EA, EB, EC Blk of Hari Nagar	1070	7460
87	**DMA089**	CE(West))	SE(West)	W1	C2A & C2B Blk , Janakpuri	734	2000
88	**DMA090**	CE(West))	SE(West)	W1	A5B, A5C Janak Puri	398	1570
89	**DMA091**	CE(West))	SE(West)	W3	Site-III, Vikas Puri, M-Block Vikas Puri , MG-I, Vikas Puri	929	---
90	**DMA092**	CE(West))	SE(West)	W3	AG-I-Vikas Puri	773	---
91	**DMA093**	CE(West))	SE(West)	W3	DG-I, DG-II Vikas	1370	---
92	**DMA094**	CE(East)	SE(East)	E1	Pocket A1, A2 & A3 LIG Flats Mayur Vihar-II	3580	---
93	**DMA095**	CE(East)	SE(East)	E1	South Ganesh Nagar	1684	---
94	**DMA096**	CE(East)	SE(East)	E1	Pocket C Mayur Vihar Phase-II	1270	---
95	**DMA101**	CE(West))	SE(North-West)	North West-I	Pkt-A 1 Sec-3 Rohini		476
96	**DMA102**	CE(West))	SE(North-West)	North West-I	*Pkt-B 10 Sec-3 Rohini*		930
97	**DMA103**	CE(West))	SE(North-West)	North West-I	*Pkt –C 12 Sec-3 Rohini*		727
98	**DMA104**	CE(West))	SE(North-West)	North West-I	*Pkt-F 23 Sec-3 Rohini*		508
99	**DMA105**	CE(West))	SE(North-West)	North West-I	*Pkt F-25 Sec-3 Rohini*		770
100	**DMA106**	CE(West))	SE(North-West)	North West-I	*Pkt- H-33 Sec-3 Rohini*		752
101	**DMA107**	CE(West))	SE(North-West)	North West-I	*Pkt- B 6 Sec-4 Rohini*		775
102	**DMA108**	CE(West))	SE(North-West)	North West-I	*Pkt –B 8 Sec-4 Rohini*		676
Note: DMAS Nos. 15 & 16 have been re-structured into DMA Nos. 101-108. Total No. of DMAs is 102							