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Contract Memo No. 46.05.0000.223.31.006.24-44 Date: 20/01/2025

Contract Agreement

This CONTRACT (hereinafter called the "Contract") is made the *20* day of the month of *January, 2025*, between, on the one hand, **Dhaka WASA (**Water Supply & Sewerage Authority), a Govt. utility service provider having its Head Office at WASA Bhaban, 98 Kazi Nazrul Islam Avenue, Kawran Bazar, Dhaka 1215, represented by its Senior System Analyst, Md. Elias Uddin Mahmud (hereinafter called the "Client") and, on the other hand, Syntech Solution Ltd., a software development firm having its head office at house-45, Road-20, Mohakhali DOHS, Dhaka-1206. (hereinafter called the "Software Firm").

WHEREAS

(a) the Client has requested the Software Firm to provide certain consulting services as defined in this Contract (hereinafter called the "Services");

(b) the Software Firm, having represented to the Client that they have the required professional skills, and personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract; and

"দেশপ্রেমের শপথ নিন, দুর্নীতিকে বিদায় দিন"



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NOW THEREFORE the parties hereto hereby agree as follows:

1. The following documents forming the integral part of this Contract shall be interpreted in the order of priority shown:
   (a) The Form of Contract;
   (b) The Particular Conditions of Contract (PCC);
   (c) The General Conditions of Contract (GCC),
   (d) The Appendices (1 to 7).

   Appendix 1: Description of the Services
   Appendix 2: Reporting Requirements
   Appendix 3: Personnel and Sub Consultants
   Appendix 4: Hours of Work for Personnel
   Appendix 5: Duties of the Client
   Appendix 6: Cost Estimates
   Appendix 7: Form of Bank Guarantee for Advance Payment (*Not Used)*
   Appendix 8: Form of Bank Guarantee for Performance Security

2. The mutual rights and obligations of the Client and the Software Firm shall be as set forth in the Contract, in particular:

   (a) the Software Firm shall carry out the Services in accordance with the provisions of the Contract; and

   (b) the Client shall make payments to the Software Firm in accordance with the provisions of the Contract.

"দেশপ্রেমের শপথ নিন, দুর্নীতিকে বিদায় দিন"



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IN WITNESS WE, the Parties hereto have caused this Contract to be signed in our respective names as of the day and year first above written.

Signed on behalf of -
Dhaka Water Supply And Sewerage Authority

Md. Elias Uddin Mahmud
Senior Systems Analyst,
MIS & Billing Department,
Dhaka WASA

Witness (1) –

Arpita Saha
Systems Analyst
MIS & Billing Department,
Dhaka WASA

Witness (2) –

Md. Arif uz zaman
Programmer
MIS & Billing Department,
Dhaka WASA

Signed on behalf of -
Syntech Solution Ltd.

Mr. Md. Rahid Hasan,
Manager, Business & Operation,
Syntech Solution Ltd.

Witness (1) –

Md. Rabiul Alam
Project Coordinator,
Syntech Solution Ltd

Witness (2) –

H.N.M Ashfaqul Islam,
Manager, Business Development,
Syntech Solution Ltd

"দেশপ্রেমের শপথ নিন, দুর্নীতিকে বিদায় দিন"

Section 4. Particular Conditions of Contract

GCC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
	RFP IDENTIFICATION NO: 46.05.0000.223.31.006.24/319
1.1 (c)	The Client is: **Senior System Analyst, MIS & Billing Department, Dhaka Water Supply & Sewerage Authority (DWASA).**
1.1 (f)	The Software Firm is: **Syntech Solution Ltd., House- 45, Road-20, Mohakhali DOHS, Dhaka- 1206.**
1.1 (k)	Contract effective date is: **20 January, 2025**
1.1 (n)	The Intended Completion Date is: **19 June, 2027**
GCC 2.1	The assignment is to be completed in the following phases: **1. Inception report** **2. live *system* deployment** **3. Deployment of other services, Training.** **4. Full-fledged live** **5. acceptance of project/whole billing software completion** The assignment is to be completed within ***5 months*** Development 5 Month, 12 Month Support & Maintenance(After successfully completion of the development period)
GCC 3.1	The addresses for **Communications and Notices** are: **Contact Person:** Senior System Analyst, MIS & Billing Department, DWASA. Address: Office of the Senior System Analyst, MIS & Billing Department, Level 7, WASA Bhaban, 98, Kazi Nazrul Islam Avenue, Kawran Bazar, Dhaka-1215. E-mail address: **eliasdhk@yahoo.com** **Software Firm**: Mr. Md. Rahid Hasan, Manager, Business & Operation, Syntech Solution Ltd. House- 45, Road-20, Mohakhali DOHS, Dhaka- 1206. Mobile: +880 1771-203343 Email: rahidsyntech@gmail.com

GCC 6.1(e)	The following additional documents shall form the part of the Contract: **RFP, Negotiation Minutes, Contract Document.** • Software development 5 (five) months, 12 (twelve) months support & maintenance after successfully completion of the development periods. • After expiry of 1(one) year of warranty period Syntech Solution Ltd. should provide maintenance and support for the Meter Management System (MMS) Software for 1 (one) year @10% per annum of contract value under a new agreement. • Syntech Solution Ltd. offer approximate yearly service cost after completion of 1 (one) year of maintenance and support, the approximate cost must be negotiable with Dhaka WASA authority. However, Dhaka WASA authority may or may not grant the service contract at its own sole discretion.
GCC 8.1	Non eligible countries are ***Israel***
GCC 11.1	The Member in Charge is: **Rashed Ahmed** Project Manager Syntech Solution Ltd. House- 45, Road-20, Mohakhali DOHS, Dhaka- 1206. Mobile: +8801711-378181 Email: rashed.syntech@gmail.com
GCC 12.1	The Authorized Representatives are: **For the Client**: Senior System Analyst, MIS & Billing Department, DWASA. Address: Office of the Senior System Analyst, MIS & Billing Department, Level 7, WASA Bhaban, 98, Kazi Nazrul Islam Avenue, Kawran Bazar,Dhaka-1215. E-mail address: **eliasdhk@yahoo.com** **For the Software Firm** : Mr. Md. Rahid Hasan, Manager, Business & Operation, Syntech Solution Ltd. House- 45, Road-20, Mohakhali DOHS Dhaka- 1206.
GCC 20.1	The Software Firm shall commence carrying out the Services within ***7(seven)*** *days* of the Effective Date of the Contract.
GCC 21.1	The contract shall expire ***30(thirty)*** *months* from the Effective Date of the Contract as mentioned in GCC Clause 18.1 above.
GCC 34.4(a)	The Software Firm is notified of such actions, claims, losses or damages not later than **4 Four** months after conclusion of the Services. *[suggested three (3) to six (6) months; may be more if deemed appropriate]*
GCC 34.4(b)	The ceiling on Software Firm's liability shall be limited to *100%*
GCC 35.1(a)	The risks and the coverage shall be as follows: N/A
GCC 37.1(c)	The other actions that shall require Client's approval are: None

GCC 39.3	The other restrictions about future use of documents and software are; "Only the client party shall use these documents and software for purposes unrelated to this Contract without the prior written approval of the other Party." [Source code, Database, Application Architecture]
GCC 41.1(c)	Assistance for carrying out the Services to be provided by the Client are: Hosting server, Network, Training Room.
GCC 47.2	The Contract ceiling amount is: **16,10,700/- (Sixteen Lakh Ten Thousand Seven Hundred Taka Only)**
GCC 48.1	The Bank Account is: **Nrb bank ltd.** **Account Name- Syntech Solution Ltd.** **Account number-7867220012407** **Routing Number- 290261404** **Islami banking gulshan Branch**
GCC 50.1	**The Contract Price is: 15,89,700/- (Fifteen Lakh Eighty-Nine Thousand Seven Hundred only) BDT.**
GCC 52.1	**Advance Payment:** N/A **Bank Guarantee** shall remain effective until N/A **Advance Payment** will be adjusted by the Client in the following manner:
GCC 53.1	Payments shall be made in line with agreed-on outputs according to the following schedule: The payment modality for software / system development may be as per following phases: • **Ten (10)** percent of the contract amount will be paid upon submission and acceptance of the **inception report.** • **Twenty Five (25)** percent of the contract amount will be paid upon submission and acceptance of the **live *system* deployment** report. • **Twenty** (20) percent of the contract amount will be paid upon submission and acceptance of the **Deployment of other services, Training.** • **Thirty** (30) percent of the contract amount will be paid upon submission and acceptance of **full-fledged live** operation report. • **Fifteen** (15) percent of the contract amount will be paid after successful completion of (development and operation phase and warranty phase) and upon submission and acceptance of project/whole billing software completion report.
GCC 53.3	The Software Firm shall be entitled to receive financing charges for delayed payment during the period of delay at the following rate N/A
GCC 75.2 (b)	The place of Arbitration is: **Dhaka Water Supply & Sewerage Authority (DWASA).**

Section 3. General Conditions of Contract

A. General

1. Definitions

1.1 In the Conditions of Contract, which include Particular Conditions and these General Conditions; the following words and expressions shall have the meanings hereby assigned to them. Boldface type is used to identify the defined terms:

(a) **Approving Authority** means the authority which, in accordance with the Delegation of Financial Powers, approves the award of Contract for the Procurement of Goods, Works and Services.

(b) **Competent Authority** means the authority that gives decision on specific issues as per delegation of administrative and/or financial powers;

(c) The **"Client"** is the party named in the PCC who engages the Consultant to perform the Services.

(d) **"Completion"** means the fulfilment of the Services by the Consultant in accordance with the terms and conditions set forth in the Contract.

(e) **"Completion Date"** is the date of actual completion of the fulfilment of the Services.

(f) The "**Consultant**" is the organisation whose proposal to perform the Services has been accepted by the Client and is named as such in the PCC and the Contract Agreement.

(g) **"Contract Agreement"** means the Agreement entered into between the Client and the Consultant together with the Contract Documents.

(h) **"Contract Documents"** means the documents listed in the Agreement, including any amendments thereto.

(i) **Contract Price** means the price to be paid for the performance of the Services, in accordance with **GCC Clause 50.1**

(j) **"Day"** means calendar day unless otherwise specified as working day.

(k) **"Effective Date"** means the date on which this Contract comes into force and effect pursuant to **GCC Clause 18.1**

(l) **"GCC"** mean the General Conditions of Contract.

(m) **"Government"** means the Government of the People's Republic of Bangladesh.

(n) The **"Intended Completion Date**" is the date on which it is intended that the Consultant shall complete the Services as specified in the PCC.

(o) **"Member"** means in case where the Consultant consists of a joint venture, any of the entities that make up the joint venture; and **"Members"** means all these entities.

(p) **"Month**" means calendar month.

(q) **"Party"** means the Client or the Consultant, as the case may be, and **"Parties"** means both of them. Third party means any party other than Client as Consultant.

(r) **"Personnel"** means professionals and support staff provided by the Consultant or by any Sub-Consultant and assigned to perform the Services or any part thereof; and "Key Personnel" means the Personnel referred to in **GCC Sub Clause 24.1**

(s) **"Reimbursable expenses"** means all assignment-related costs other than Consultant's remuneration.

(t) **"Remuneration"** means all costs related to payments of fees to the Consultant for the time spent by the professional and other staff on assignment related activities.

(u) **PCC"** means the Particular Conditions of Contract.

(v) **"Services"** means the tasks or activities to be performed and the services to be provided by the Consultant pursuant to the Contract Agreement.

(w) **"Sub-Consultant"** means any person or entity to whom/which the Consultant subcontracts any part of the Services.

(x) **"Third Party"** means any person or entity other than the Government, the Client, the Consultant or a Sub-Consultant.

(y) **"Writing"** means communication written by hand or machine duly signed and includes properly authenticated messages by facsimile or electronic mail.

2. Phased Completion

2.1 If phased completion is specified in the PCC, references in the GCC to the Services, the Completion Date, and the Intended Completion Date apply to any Phase of the Services (other than references to the Completion Date and Intended Completion Date for the whole of the Services).

3. Communications and Notices

3.1 Communications between Parties (notice, request or consent required or permitted to be given or made by one party to the other) pursuant to the Contract shall be in writing to the address as specified in the PCC.

3.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

3.3 A Party may change its address for notice hereunder by giving the other Party notice of such change to the address.

4. Governing Law

4.1 The Contract shall be governed by and interpreted in accordance with the laws of the People's Republic of Bangladesh.

5. Governing Language

5.1 The Contract shall be written in **English**. All correspondences and documents relating to the Contract may be written in English or ***Bangla***. Supporting documents and printed literature that are part of the Contract may be in another language, provided they are accompanied by an accurate translation of the relevant passages in English, in which case, for purposes of interpretation of the Contract, such translation shall govern.

5.2 The Consultant shall bear all costs of translation to the governing language and all risks of the accuracy of such translation.

6. Documents Forming the Contract in Order of Precedence

6.1 The following documents forming the Contract shall be interpreted in the order of priority:

(a) the Contract Agreement;

(b) the Particular Conditions of Contract (PCC);

(c) the General Conditions of Contract (GCC);

(d) the Appendix (1 to 7); and

(e) any other documents as specified in the PCC forming part of the Contract. 0

7. Assignment

7.1. Neither the Client nor the Consultant shall assign, in whole or in part, their obligations under this Contract; except with prior written approval of the Client.

8. Eligible Services

8.1 All materials, equipment, plant, and supplies used by the Consultant and services supplied under the Contract shall have their origin in the countries, except those as specified in the PCC.

9. Contractual Ethics

9.1 No fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the Proposal or the contract, shall have been given or received in connection with the selection process or in the Contract execution.

10. Joint Venture, Consortium or Association (JVCA)

10.1 If the consultant is a Joint Venture all of the parties shall sign the Contract Agreement.

10.2 Each partner of the Joint Venture (this does not include sub consultancy) shall be jointly and severally liable for the execution of the Contract, all liabilities and ethical and legal obligations in accordance with the terms of the Contract.

10.3 The composition or the constitution of the Joint Venture shall not be altered without the prior approval of the Client.

11. Authority of Member in Charge

11.1 In case the Consultant is a Joint Venture consisting of more than one entity, the partners shall designate one party to act as Representative, as specified in the PCC, with authority to conduct all business for and on behalf of all partners of the Joint Venture, including without limitation the receiving of instructions and payments from the Client.

12. Authorized Representatives

12.1 Any action required or permitted to be taken, and any document required or permitted to be executed under this Contract by the Client or the Consultant may be taken or executed by the officials as specified in the PCC.

13. Relation between the Parties

13.1 Nothing contained herein shall be construed as establishing a relation of master and servant or of principal and agent as between the Client and the Consultant. The Consultant, subject to this Contract, has complete charge of Personnel and Sub-Consultants, if any, performing the Services and shall be fully responsible for the Services performed by them or on their behalf hereunder.

14. Location

14.1 The Services shall be performed at such locations as are specified in **Appendix 1**, to the Contract and, where the location of a particular task is not so specified, at such locations as the Client may approve.

15. Taxes

15.1 The Consultant, Sub-Consultants and Personnel shall pay such taxes, duties, fees, levies and other charges under the Applicable Law, the amount of which is deemed to have been included in the Contract Price unless otherwise exempted by the Government.

16. Corrupt, Fraudulent, Collusive or Coercive Practices

16.1 The Government requires that Client, as well as Consultants shall observe the highest standard of ethics during the implementation of procurement proceedings and the execution of the Contract under public funds.

16.2 The Government defines, for the purposes of this provision, the terms set forth below as follows:

(a) *"corrupt practice"* means offering, giving, or promising to give, directly or indirectly, to any officer or employee of a Procuring Entity or other governmental/private authority or any individual a gratuity in any form, an employment or any other thing or service of value, as an inducement with respect to an act or decision of, or method followed by, a Procuring Entity in connection with the procurement proceeding;

(b) *"fraudulent practice"* means a misrepresentation or omission of facts in order to influence a procurement proceedings or the execution of a contract to the detriment of the Client,

(c) *"collusive practice"* means a scheme or arrangement among two and more Consultants with or without the knowledge of the Client (prior to or after proposal submission) designed to establish proposal prices at artificial, non-competitive levels and to deprive the Client of the benefits of free, open and genuine competition; and

(d) *"coercive practice"* means harming or threatening to harm, directly or indirectly, persons or their property to influence the procurement proceedings, or affect the execution of a contract.

16.3 The Government requires that Client, as well as Consultants shall, during the Procurement proceedings and the execution of Contracts under public funds, ensure-

(a) strict compliance with the provisions of Section 64 of the Public Procurement Act, 2006;

(b) abiding by the code of ethics as mentioned in the Rule127 of the Public Procurement Rules, 2008;

(c) that neither it, nor any other member of its staff, or any other agents or intermediaries working on its behalf engages in any such practice as detailed in GCC Sub Clause 16.3(b).

16.4 Should any corrupt or fraudulent practice of any kind come to the knowledge of the Client, it shall, in the first place, allow the Consultant to provide an explanation and shall take actions only when a satisfactory explanation is not received. Such decision and the reasons therefore, shall be recorded in the procurement proceedings and promptly communicated to the Consultant concerned. Any communications between the Consultant and the Client related to matters of alleged fraud or corruption shall be in writing.

16.5 If corrupt, fraudulent, collusive or coercive practices of any kind determined by the Client against the Consultant alleged to have carried out such practices, the Client will :

(a) exclude the Consultant from further participation in the particular Procurement proceeding; or

(b) declare, at its discretion, the Consultant to be ineligible to participate in further Procurement proceedings, either indefinitely or for a specific period of time from participation in procurement proceedings under public fund.

B. Commencement, Completion and Modification of Contract

17. Effectiveness of Contract

17.1 The Contract shall come into force and effect on the date, called the "Effective Date".

18. Effective Date

18.1 This Contract shall come into effect on the date the Contract is signed by both parties. The date the Contract comes into effect is defined as the Effective Date.

19. Termination of Contract for Failure to Become Effective

19.1 If the Contract has not become effective within such time period after the date of the Contract signed by the Parties as specified in the GCC Clause 18.1, either Party may, by not less than twenty-one (**21**) days written notice to the other Party, declare this Contract to be null and void, and in the event of such a declaration by either Party, neither Party shall have any claim against the other Party with respect hereto.

20. Commencement of Services

20.1 The Consultant shall commence carrying out the Services not later than the number of days after the Effective Date as specified in the PCC.

21. Expiration of Contract

21.1 Unless terminated earlier pursuant to GCC Clauses **64 to 67,** this Contract shall expire at the end of such period after the Effective Date as specified in the PCC.

22. Modifications or Variations

22.1 Pursuant to Rule 104 (d)(8) of the Public Procurement Rules,2008, the Client may notify the Consultant to alter, amend, omit, add to, or otherwise vary the services, provided that the changes in the Services involved are necessary for the satisfactory completion of the assignment.

22.2 Any modification or variation of the terms and conditions of the Contract, including any modification or variation of the Scope of the Services, may only be made by written agreement between the Parties. Each Party shall give due consideration to any proposals for modification or variation made by the other Party.

22.3 The Consultant shall submit to the Client an estimate for the proposed change in the Services within fifteen (**15**) days of receipt of such Variation Order(s) as stated under GCC Sub Clause 22.2. The estimate shall comprise the following:

(a) an estimate of the impacts, if any , of the Variation Orders on the staffing Schedule;

(b) a detailed schedule for execution of the Variation Orders showing the resources to be employed and significant outputs;

(c) a detail costing covering the total amount of the Variation Orders; and

(d) a proposed revision of the schedule of payments as approved, if required.

22.4 Variation Orders, as stated under GCC Sub Clause 22.2, costing within fifteen (**15**) percent of the original Contract Price shall be approved by the **Approving Authority** and for cost beyond fifteen (**15**) percent by the authority higher than the **Approving Authority**, as determined by the Delegation of Financial Power and sub-delegation thereof, pursuant to Rule 74(4) of the Public Procurement Rules , 2008.

22.5 For the purpose of determining the remuneration due for services or any other reimbursable expenses under Variation Orders as may be agreed under GCC Sub Clause 22, the breakdown of the unit price provided in Forms 5B3 and 5B4 shall be the basis.

C. Consultant's Personnel and Sub-Consultants

23. General

23.1 The Consultant shall employ and provide such qualified and experienced Personnel and Sub Consultants as are required to carry out the Services.

24. Description of Personnel

24.1 The title, agreed job description, minimum qualification and estimated period of engagement in the carrying out of the Services of each of the Consultant's Key Personnel are described in **Appendix 3** to the Contract

25. Approval of Personnel

25.1 The Client hereby approves the Key Personnel and Sub Consultants listed by title as well as by name in Appendix 3 to the contract. Except as the Client may otherwise agree, no changes shall be made in the Key personnel.

26. Working Hours, Overtime, Leave

26.1 Working hours and holidays, entitlement of leave and overtime, etc for Key Personnel are set forth in **Appendix 4** to the Contract.

26.2 The Key Personnel shall not be entitled to be paid for overtime nor to take paid sick leave or vacation leave, except as specified in **Appendix 4** to the contract and except as specified in such **Appendix**, the Consultant's remuneration shall be deemed to cover these items. All leave to be allowed to the Personnel is included in the staff-months of service set forth in **Appendix 3** to the contract. Any taking of leave by Personnel shall be subject to the prior approval by the Consultant who shall ensure that absence for leave purposes will not delay the progress and adequate supervision of the Services.

27. Removal and/or Replacement of Personnel

27.1 If the Client:

(a) finds that any of the Personnel has committed serious misconduct or has been charged with having committed a criminal action; or

(b) has reasonable cause to be dissatisfied with the performance of any of the Personnel,

then the Consultant shall, at the Client's written request specifying the grounds therefore, forthwith provide as a replacement a person with qualifications and experience acceptable to the Client. The Consultant shall not be paid for any extra expense for the replacement(s).

27.2 In the event that any Sub-Consultant is found by the Client to be incompetent or incapable of discharging the assigned duties, the Client may request and the Consultant shall provide a replacement, with qualifications and experience acceptable to the Client, or to resume the performance of the Services itself.

D. Obligations of the Consultant

28. Standard of Performance

28.1 The Consultant shall:

(a) perform the Services and carry out its obligations hereunder with all due diligence, efficiency and economy, in accordance with generally accepted professional standards and practices, and shall observe sound management practices, and employ appropriate technology and safe and effective equipment, machinery, materials and methods etc;

(b) always act, in respect of any matter relating to this Contract or to the Services, as faithful advisers to the Client, and;

(c) at all times support and safeguard the Client's legitimate interests in any dealings with Sub Consultants or Third Parties.

29. Conflict of Interests

29.1 The Consultant shall hold the Client's interests paramount, without any consideration for future work, and strictly avoid conflict with other assignments or their own corporate interests, pursuant to Rule 55 of the Public Procurement Rules, 2008.

30. Consultant not to Benefit from Commissions Discounts etc.

30.1 The remuneration of the Consultant as stated under GCC Clauses 47, 48 and 49 shall constitute the Consultant's sole remuneration in connection with this Contract and, subject to GCC Sub Clause 31.1 hereof, the Consultant shall not accept for their own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or in the discharge of their obligations hereunder, and the Consultant shall use their best efforts to ensure that any Sub-Consultants, as well as the Personnel and agents of either of them, similarly shall not receive any such additional remuneration.

30.2 Furthermore, if the Consultant, as part of the Services, have the responsibility of advising the Client on the procurement of Goods, Works or Services, the Consultant shall at all times exercise such responsibility in the best interest of the Client. Any discounts or commissions obtained by the Consultant in the exercise of such procurement responsibility shall be for the account of the Client.

31. Consultant and Affiliates not to Engage in Certain Activities

31.1 The Consultant agrees that, during the term of this Contract and after its termination, the Consultant and any entity affiliated with the Consultant, as well as any Sub-Consultant and any entity affiliated with such Sub-Consultant, shall be disqualified from providing goods, works or services (other than consulting services) for any project resulting from or closely related to this consulting services,

32. Prohibition of Conflicting Activities

32.1 The Consultant shall not engage, and shall cause their Personnel as well as their Sub-Consultants and their Personnel not to engage, either directly or indirectly, in any business or professional activities in Bangladesh that would conflict with the activities assigned to them under this Contract.

33. Confidentiality

33.1 Except with the prior written consent of the Client, the Consultant and the Personnel shall not at any time communicate to any person or entity any confidential information acquired in the course of the Services, nor shall the Consultant and the Personnel make public the recommendations formulated in the course of, or as a result of, the Services.

[For the purposes of this Clause "confidential information" means any information or knowledge acquired by the Consultant and/or their Personnel arising out of, or in connection with, the performance of the Services under this Contract that is not otherwise available to the public]

34. Liability of the Consultant

34.1 The Consultant, in lieu of or in addition to furnishing any Performance Security (as the case may be), shall be, liable to and required to indemnify, the Client as stated under GCC Sub Clause 34.2 thru 34.6 inclusive for due performance of the Contract.

34.2 The Consultant shall indemnify the Client from and against any and all claims, liabilities, obligations, losses, damages, penalties, actions, judgment, suits, proceedings, demands, costs, expenses and disbursements of whatsoever nature that may be imposed on, incurred by or asserted against the Client during or in connection with the Services by reason of:

(a) infringement or alleged infringement by the Consultant of any patent or other protected right; or

(b) plagiarism or alleged plagiarism by the Consultant.

34.3 The Consultant shall ensure that all goods and services (including without limitation all computer hardware, software and systems) procured by the Consultant out of funds provided or reimbursed by the Client or used by the Consultant in the carrying out of the Services do not violate or infringe any industrial property or intellectual property right or claim of any third party.

34.4 The Consultant shall indemnify, protect and defend at their own expense the Client, and its agents and employees from and against any and all actions, claims, losses or damages arising out of Consultant's failure to exercise the skill and care required under GCC Clause 28 provided:

(a) that the Consultant is notified of such actions, claims, losses or damages not later than the number of months after conclusion of the Services as specified in the PCC;

(b) that the ceiling on the Consultant's liability under GCC Clause 28 shall be limited to the amount as specified in the PCC, except that such ceiling shall not apply to actions, claims, losses or damages caused by Consultant's gross negligence or reckless conduct; and

(c) that the Consultant's liability under GCC Clause 28 shall be limited to actions, claims, losses or damages directly caused by such failure to exercise the said skill and care, and shall not include liability for any actions, claims, losses or damages arising out of occurrences incidental or indirectly consequential to such failure.

34.5 In addition to any liability the Consultant may have under GCC Clause 28, the Consultant shall, pursuant to Rule 125 (5) of the Public Procurement Rules, 2008, at their own cost and expense, upon request of Client; re-perform the Services in the event of Consultant's failure to exercise the skill and care required under GCC Clause 28.

34.6 Notwithstanding the provisions of GCC Sub Clause 34.4(a), the Consultant shall have no liability whatsoever for actions, claims, losses or damages occasioned by:

(a) Client's overriding a decision or recommendation of the Consultant or requiring the Consultant to implement a decision or recommendation with which Consultant do not agree; or

(b) the improper execution of the Consultant's instructions by agents, employees or independent contractors of the Client.

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35. Insurance to be taken out by the Consultant

35.1 The Consultant

(a) shall take out and maintain, and shall cause any Sub-Consultants to take out and maintain, at their (or the Sub-Consultants', as the case may be) own cost, but on terms and conditions approved by the Client, insurance against the risks, and for the coverage as specified in the PCC; and

(b) at the Client's request, shall provide evidence to the Client showing that such insurance has been taken out and maintained and that the current premiums therefore have been paid.

36. Accounting, Inspection and Auditing

36.1 The Consultant shall

(a) keep accurate and systematic accounts and records in respect of the Services hereunder, in accordance with nationally/internationally accepted accounting principles and in such form and detail as will clearly identify all relevant changes in time and costs, and the bases thereof;

and

(b) periodically permit the Client or its designated representative or the Development Partner's representative, when applicable, and up to five (5) years from the expiration or termination of this Contract, to inspect the same and make copies as well as to have them audited by auditors appointed by the Client, if so required by the Client as the case may be.

36.2 The Consultant shall furnish the Client such information relating to the Services as the Client may from time to time reasonably request.

37. Consultant's Actions Requiring Client's Prior Approval

37.1 The Consultant shall obtain the Client's prior approval in writing before taking any of the following actions:

(a) any change or addition to the Personnel listed in **Appendix 3** to the Contract;

(b) any subcontract relating to the Services to an extent and, with such specialists and entities as may be approved; and

(c) any other action that may be specified in the PCC.

37.2 Notwithstanding any approval under GCC Sub Clause 37.1(b), the Consultant shall remain fully liable for the performance of Services by the Sub-Consultant and its Personnel and retain full responsibility for the Services.

38. Reporting Obligations

38.1 The Consultant shall submit to the Client the reports and documents specified in **Appendix 2** to the Contract hereto, in the form, in the numbers and within the time periods set forth in the **Appendix 2**. Final Reports shall be delivered in CD ROM in addition to the hard copies specified in the said **Appendix**.

39. Proprietary Rights on Documents Prepared by the Consultant

39.1 All plans, maps, diagrams, drawings, specifications, designs, statistics, reports, other documents, data and software compiled or prepared by the Consultant for the Client under this Contract shall become and remain the absolute property of the Client, and the Consultant shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Client, together with a detailed inventory.

39.2 The Consultant may retain a copy of such documents and software, and use such software for their own use with the prior written approval of the Client.

39.3 Other restrictions about the future use of these documents and software, if any, shall be as specified in the PCC.

40. Proprietary Rights on Equipment &

40.1 Equipment, tools and materials made available to the Consultant by the Client, or purchased by the Consultant wholly or partly with funds provided

Materials Furnished by the Client.

by the Client, shall be the property of the Client and shall be marked accordingly.

40.2 Upon termination or expiration of this Contract, the Consultant shall make available to the Client an inventory of such equipment and materials and shall dispose of such equipment and materials in accordance with the Client's instructions.

40.3 During the possession of such equipment and materials, the Consultant, unless otherwise instructed by the Client in writing, shall insure them at the expense of the Client in an amount equal to their full replacement value.

E. Obligations of the Client

41. Assistance and Exemptions

41.1 The Client shall use its best efforts to ensure that the Government shall:

(a) provide the Consultant, Sub-Consultants and Personnel with documents as shall be necessary to enable the Consultant, Sub-Consultants or Personnel to perform the Services;

(b) assist the Consultant in obtaining necessary licenses and permits needed to carry out the Services; and

(c) provide to the Consultant, Sub-Consultants and Personnel any such other assistance as may be specified in the PCC.

42. Access to Land

42.1 The Client warrants that the Consultant shall have, free of charge, unimpeded access to all land in respect of which access is required for the performance of the Services. The Consultant shall, however, be responsible for any damage to such land or any property thereon resulting from such access, and will indemnify the client and each of the Personnel in respect of liability for any such damage, unless such damage is caused by the default or negligence of the Consultant or any Sub-Consultant or the Personnel of either of them.

43. Change in the Applicable Law Related to Taxes

43.1 If, after the date of signing of the Contract, and during the performance of the Contract, there is any change in the Applicable Law with respect to taxes which increases or decreases the cost incurred by the Consultant in performing the Services, then the amounts otherwise payable to the Consultant under this Contract shall be increased or decreased accordingly by agreement between the Parties hereto, and corresponding adjustments shall be made to the ceiling amount specified in GCC Sub Clause 47.2.

44. Services, Facilities and Property

44.1 The Client shall make available to the Consultant, for the purposes of the Services, free of any charge, the services and facilities described in Appendix **5A** to the Contract at the times and in the manner specified.

44.2 In case that such services, facilities and property shall not be made available to the Consultant as specified in **Appendix 5** the Parties shall agree on:

i. any time extension that may be appropriate to grant to the Consultant for the performance of the Services;

ii. the manner in which the Consultant shall procure any such services and facilities from other sources, and

iii. the additional payments, if any, to be made to the Consultant as a result thereof pursuant to GCC Sub Clause 47.3 hereinafter.

45. Payment

45.1 In consideration of the Services performed by the Consultant under this Contract, the Client shall make to the Consultant such payments and in such manner as stated under GCC Clauses 48 to 55.

46. Counterpart Personnel

46.1 The Client shall make available to the Consultant free of charge such professional and support counterpart personnel, to be nominated by the Client with the Consultant's advice, if specified in **Appendix 5B** to the contract.

46.2 If counterpart personnel are not provided by the Client to the Consultant as and when specified in **Appendix 5B** the Client and the Consultant shall agree on;

(a) how the affected part of the Services shall be carried out, and

(b) the additional payments, if any, to be made by the Client to the Consultant as a result thereof pursuant to GCC Sub Clause 47.3

46.3 Professional and support counterpart personnel, excluding Client's liaison personnel, shall work under the exclusive direction of the Consultant. If any member of the counterpart personnel fails to perform adequately any work assigned to such member by the Consultant that is consistent with the position occupied by such member, the Consultant may request the replacement of such member, and the Client shall not unreasonably refuse to act upon such request.

F. Payments to the Consultants

47. Cost Estimate of Services: Ceiling Amount

47.1 An estimate of the cost of the Services is set forth in **Appendix 6** to the contract.

47.2 Except as may be otherwise agreed under GCC Clause 22 and subject to GCC Sub Clause 47.3, payments under this Contract shall not exceed the ceiling as specified in the PCC.

47.3 Notwithstanding GCC Sub Clause 47.2, if pursuant to any of the GCC Clauses 44, 46 or 48 the Parties shall agree that additional payments as the case may be, shall be made to the Consultant in order to cover any necessary additional expenditures not envisaged in the cost estimate referred to in GCC Sub Clause 47.1 above, the ceiling set forth in GCC Sub Clause 47.2 above shall be increased by the amount of any such additional payments.

48. Payments: General

48.1 All payments under this Contract shall be **made to the account of the Consultant** as specified in the PCC.

48.2 Payments in respect of remuneration or reimbursable expenses, which exceed the cost estimates for these items as set forth in **Appendix 6** to the contract, may be charged to the physical contingency provided for only if the Client approved such expenditures prior to being incurred.

48.3 With the exception of the final payment as stated under GCC Clause 53, payments do not constitute acceptance of the Services nor relieve the Consultant of any obligations hereunder.

49. Lump-Sum Payment

49.1 Subject to the ceiling specified in GCC Sub-Clause 49.2, the Client shall pay to the Consultant total remuneration which shall be **a fixed lump-sum** including all staff costs, sub-consultants costs, reimbursables, and all other costs incurred by the Consultant in carrying out the Services described in Appendix 1. The contract price may only be increased above the amounts stated in GCC Sub-Clause 49.2, if the Parties have agreed to additional payments in accordance with GCC Sub-Clause 22.1.

50. Contract Price

50.1 The Contract Price is set forth in the PCC

51. Modes of Payment

51.1 Payments in respect of the Services shall be made as specified in GCC Clauses from 52 to 55.

52. Advance Payment

52.1 If so specified in the PCC, an Advance Payment shall be made to the Consultant, of the amount and within the number of days after the Effective Date as specified in the PCC. If the advance payment exceeds ten percent (10%) of the contract price, then the advance payment shall be made against the provision of a Bank Guarantee by the Consultant which shall:

(a) remain effective until the Advance Payment has been fully offset; and

(b) be in the format as shown in Appendix 7.

52.2 The Advance Payment will be offset by the Client in a way specified in the PCC.

53. Interim Payments

53.1 Payment will be made according to the payment schedule stated in the PCC subject to the provision of advance payment stated in GCC Clause 52. Any other payment shall be made after the conditions listed in the PCC for such payment have been met, and the Consultant has submitted an invoice to the Client specifying the amount due.

53.2 The Client shall pay the Consultant within thirty (30) days after the receipt by the Client of the invoices with supporting documents. Only such portion of a statement that is not satisfactorily supported may be withheld from payment.

53.3 If the Client has delayed payment beyond thirty (**30**) days after the due date, interest at the annual rate as specified in the PCC shall become payable as from the above due date on any amount due by, but not paid on, such due date.

53.4 Should any discrepancy be found to exist between actual payment and costs authorized to be incurred by the Consultant, the Client may add or subtract the difference from any subsequent payments. Interest at the annual rate specified in the PCC shall become payable as from the above due date on any amount due by, but not paid on, such due date.

54. Amendment to the Contract

54.1 The amendment to Contract shall generally include extension of time to the Intended Completion Date, increase or decrease in original Contract price and any other changes duly approved under the Conditions of the Contract.

54.2 The Client contracting, shall amend the Contract incorporating the required approved changes subsequently introduced to the original Terms and Conditions of the Contract in line with the Rules.

55. Final Payment

55.1 The final payment under this Clause shall be made only after the final report and a final statement, identified as such, shall have been submitted by the Consultant and approved as satisfactory by the Client. The Services shall be deemed completed and finally accepted by the Client and the final report and final statement shall be deemed approved by the Client as satisfactory sixty (60) days after receipt of the final report and final statement by the Client unless the Client, within such sixty (60) day period, gives written notice to the Consultant specifying in detail deficiencies in the Services, the final report or final statement. The Consultant shall thereupon promptly make any necessary corrections, and thereafter the foregoing process shall be repeated until such time as the final report and the final statement have been approved by the Client.

56. Suspension of Payments

56.1 The Client may, by written notice of suspension to the Consultant, suspend all or part of the payments to the Consultant hereunder if the Consultant fails to perform any of its obligations under this Contract, including the carrying out of the Services, provided that such notice of suspension:

(a) shall specify the nature of the failure, and

(b) shall request the Consultant to remedy such failure within a period not exceeding thirty (30) days after receipt by the Consultant of such notice of suspension.

G. Time Control

57. Performance Security

57.1 The Client shall notify the Consultant of any claim made against the Bank issuing the Performance Security.

57.2 The Client may claim against the Performance Security if any of the following events occurs for fourteen (14) days or more.

a) The Consultant is in breach of the terms and conditions of Contract and the Client has duly notified him or her ; and

b) The Consultant has not paid an amount due to the Client and the Client has duly notified him or her.

57.3 In the event as stated under GCC Sub Clause 57.2, the Client shall assess the estimated compensation payable by the Consultant and the Client shall call for the amount of such compensation from the PS. If it is found that the compensation is to the full value or more of the PS, the Consultant is liable to pay compensation under the Contract amounting to the full value of the Performance Security or more.

57.4 If there is no reason to call the Security, the Security shall be discharged by the Client to the Consultant not later than twenty-eight (28) days following the date of Completion of the Consultant's performance obligations under the Contract.

58. Completion of Services

58.1 The Consultant shall carry out the Services in accordance with the Programme submitted by the Consultant, as updated with the approval of the Client and complete them by the Intended Completion Date as stated under GCC Clause 20.1

59. Early Warning

59.1 If at any time during performance of the Contract, the Consultant or its Sub-Consultants should encounter events, circumstances conditions that may adversely affect the quality of the work, increase the cost of Services or delay the execution of the Services, the Consultant shall promptly notify the Client in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Consultant's notice, the Client shall evaluate the situation, and the Consultant shall cooperate with the Client in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced.

60. Extension of the Intended Completion Date

60.1 In the event the Consultant is unable to complete the assignment by the Intended Completion Date it may request the Client to extend the Intended Completion Date giving reasons. The Client shall extend the Intended Completion Date if the reasons given by the Consultant, are found acceptable. The Client shall, however, decide by how much to extend the Intended Completion Date.

61. Progress Meetings

61.1 The Client and the Consultant shall arrange progress meetings at regular intervals to review the progress of works. The meeting may review the plans for dealing with matters raised in accordance with the early warning procedure.

61.2 The Client shall record the business of progress meetings and provide copies of the record to those attending the meeting and to the Consultant for action.

H. Good Faith

62. Good Faith

62.1 The Parties undertake to act in good faith with respect to each other's rights under this Contract and to adopt all reasonable measures to ensure the realization of the objectives of this Contract.

63. Fairness in Operation

63.1 The Parties recognize that it is impractical in the Contract to provide for every contingency which may arise during the life of the Contract, and the Parties hereby agree that it is their intention that this Contract shall operate fairly as between them, and without detriment to the interest of either of them, and that, if during the term of this Contract either Party believes that this Contract is operating unfairly, the Parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with GCC Clause 74.

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I. Termination and Settlement of Disputes

64. Termination for Default

64.1 The Client or the Consultant, without prejudice to any other remedy for breach of Contract, by notice of default sent to the other party, may terminate the Contract in whole or in part if the other party causes a fundamental breach of contract. In such an occurrence one party shall give not less than thirty (**30**) days' written notice of termination to the other party.

64.2 Fundamental breaches of the Contract shall include but shall not be limited to, the following:

(a) If the Consultant fails to remedy a failure in the performance of their obligations hereunder, as specified in a notice of suspension pursuant to GCC Clause 56, within thirty (**30**) days of receipt of such notice of suspension or within such further period as the Client may have subsequently approved in writing;

(b) If the Consultant submits to the Client a statement which has a material effect on the rights, obligations or interests of the Client and which the Consultant knows to be false;

(c) If the Consultant, in the judgment of the Client, has engaged in corrupt, fraudulent, collusive and coercive practices in competing for or in executing this Contract;

(d) If the Consultant or the Client fails to comply with any final decision reached as a result of arbitration proceedings pursuant to GCC Sub Clause 75.2;

(e) If the Client fails to pay any money due to the Consultant pursuant to this Contract and not subject to dispute pursuant to GCC Sub Clause 75.2 within thirty (**30**) days after receiving written notice from the Consultant that such payment is overdue; or

(f) If the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within thirty (**30**) days (or such longer period as the Consultant may have subsequently approved in writing) following the receipt by the Client of the Consultant's notice specifying such breach.

65. Termination for Insolvency

65.1 The Client and the Consultant may at any time terminate the Contract by giving notice to the other party if:

(a) the Client becomes bankrupt or otherwise insolvent;

(b) the Consultant becomes (or, if the Consultant consist of more than one entity, if any of its Members becomes) insolvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary; or

(c) in such event, termination will be without compensation to any party, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the other party.

66. Termination for Convenience

66.1 The Client, by notice sent to the Consultant, may in its sole discretion and for any reason whatsoever, terminates the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Client's convenience, the extent to which performance of the Consultant under the Contract is terminated, and the date upon which such termination becomes effective.

67. Termination because of Force Majeure

67.1 The Client and the Consultant may at any time terminate the Contract by giving notice to the other party if, as the result of Force Majeure, the Consultant is unable to perform a material portion of the Services for a period of not less than forty five (**45**) days.

68. Force Majeure

68.1 For the purposes of this Contract, **"Force Majeure"** means an event which is beyond the reasonable control of a Party, is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of a Party, and which makes a Party's performance of its obligations

hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood, epidemics, or other adverse weather conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by Government agencies.

68.2 Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

69. No Breach of Contract

69.1 The failure of a Party to fulfil any of its obligations hereunder shall not be considered to be a breach of, or default under this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due care and reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Contract.

70. Measures to be taken on Force Majeure

70.1 A Party affected by an event of Force Majeure shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

70.2 A Party affected by an event of Force Majeure shall notify the other Party of such event as soon as possible, and in any case not later than fourteen (**14**) days following the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give written notice of the restoration of normal conditions as soon as possible.

70.3 Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

70.4 During the period of their inability to perform the Services as a result of an event of Force Majeure, the Consultant, upon instructions by the Client, shall either:

(a) demobilize, in which case the Consultant shall be reimbursed for additional costs they reasonably and necessarily incurred, and, if required by the Client, in reactivating the Services; or

(b) continue with the Services to the extent possible, in which case the Consultant shall continue to be paid under the terms of this Contract and be reimbursed for additional costs reasonably and necessarily incurred.

71. Cessation of Rights and Obligations

71.1 Upon termination of the Contract pursuant to GCC Clauses 63 to 66, or upon expiration of this Contract pursuant to GCC Clause 21, all rights and obligations of the Parties hereunder shall cease, except

(a) such rights and obligations as may have accrued on the date of termination or expiration;

(b) the obligation of confidentiality set forth in GCC Clause 33;

(c) the Consultant's obligation to permit inspection, copying and auditing of their accounts and records set forth in GCC Clause 36; and

(d) any right which a Party may have under the Applicable Law.

72. Cessation of Services

72.1 Upon termination of the Contract by notice of either Party to the other pursuant to GCC Clauses 63 to 66, the Consultant shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum. With respect to documents prepared by the Consultant and equipment and materials furnished by the Client, the Consultant shall proceed as provided, respectively, by GCC Clauses 39 and or 40.

73. Payment upon Termination

73.1 Upon termination of this Contract pursuant to GCC Clauses to 63 to 66, the Client shall make the following payments to the Consultant:

(a) payment pursuant to GCC Clause 47 to 55 for Services satisfactorily performed prior to the effective date of termination;

(b) except in the case of termination pursuant to GCC Sub Clause 63.2 (a), (b), & (c) and GCC Sub Clause 64.1 (b), reimbursement of any reasonable cost incidental to the prompt and orderly termination of the Contract, including the cost of the return travel of the Personnel and their eligible dependents.

74. Disputes about Events of Termination

74.1 If either Party disputes whether an event specified in GCC Clause 63, 64 or 65 has occurred, such Party may, within forty-five (**45**) days after receipt of notice of termination from the other Party, refer the matter to arbitration pursuant to GCC Clause 75.2, and this Contract shall not be terminated on account of such event except in accordance with the terms of any resulting arbitral award.

74.2 In the case of disagreement between the Parties as to the existence or extent of Force Majeure, the matter shall be settled according to GCC Clause 75.

75. Settlement of Disputes

75.1 Amicable Settlement

The Client and the Consultant shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

75.2 Arbitration

If the Parties are unable to reach a settlement within twenty-eight (28) days of the first written correspondence on the matter of disagreement, then either Party may give notice to the other party of its intention to commence arbitration.

(a) Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Services under the Contract. Arbitration proceedings shall be conducted in accordance with the Arbitration Act (**Act No 1 of 2001**) of Bangladesh as at present in force at the location specified in the PCC.

(b) Notwithstanding any reference to arbitration herein

(i) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree ; and

(ii) the Client shall pay the Consultant any monies due the Consultant

5D. Appendices

Appendix 1 Description of the Services

Terms of Reference (TOR)

Design, Development, Testing, Implementation, Training & Maintenance of Web-based Software of Meter Management System (MMS)

A. Overview

Dhaka Water Supply & Sewerage Authority (DWASA) was established in 1963 as an independent organization with the mandate of Water Supply and Sewage disposal to the city dwellers of Dhaka. In 1990, Water Supply service of Narayangonj City also came under the purview of DWASA. Its activities have been reorganized by 'The WASA Act, of 1996' and according to this act, DWASA is now operating as an autonomous body with corporate culture in its management & operation.

Recently, the DWASA proposed development of a system as part of the Smart Dhaka WASA. The DWASA is mandated to undertake web-based software activities for the meter division.

Dhaka Water Supply & Sewerage Authority (DWASA) maintaining paper-based manual system for meter management. Although, record keeping to some extent is not difficult but generating reports has become a major problem area in the current system. Based on this Dhaka Water Supply & Sewerage Authority (DWASA) has decided to develop an automated Customized Web Software which will keep records and generate daily, weekly or any periodical reports of all the department to get automated those are normally prescribed for day to day activity.

Being one of the pioneers and renowned IT Solution Provider in Bangladesh and proposing an automation system to keep the analytical data that can structure system flow, manage data, minimize loss of information and generate more accurate reports with less hassle and within an affordable and user-friendly system. The main objective of this project is to bring the entire meter division of Dhaka Water Supply & Sewerage Authority (DWASA) of under one network and one central database with MIS.

Besides to record this information and to maintain these large volume of data is very difficult and error prone. The proposed automation project is designed to overcome all these problems and make the process easier.

B. Objectives

The MMS will be a web based system to keep a record of all the data and information related to Meter Management System. The system should enable data input from multiple sources and compute that information and make it available for online.

The project should automate the existing manual system of Meter Management tasks, all the basic facilities will be accumulated in this automated system.

The development of online MMS aims to:

- Provide easy access to get information
- Improve data integrity and transparency
- Minimize human errors
- Reduce face to face interaction
- Improve efficiency of the data collection, analysis and information dissemination
- Ensure accountability of the staff.
- SSO supported

C. Scope of Services

The DWASA enhancement scope has to be expanded through 3 main stages:

1. Requirement analysis and Implementation Stage
2. System Stabilization, User Acceptance Test and code review stage
3. Support and Maintenance Stage

1) Requirement analysis and Implementation Stage:

The selected firm will have to study the service process. The firm will come up with System Requirement Specification (SRS) to develop a good system after consulting with the users/stakeholders. Once the system is developed users will be trained to use and then the system will be piloted. Justified recommendations will be incorporated into the system and then final testing will be carried out before implementation of the system and other relevant solutions.

2) System Stabilization and User Acceptance Test stage:

The firm shall complete the following activities for the period of scheduled months after the delivery complete:

- Dedicated On-site support to the DWASA with the development team still on board.
- Preparation of UAT environments.
- Incorporate all minor and major changes such as changes in database objects and relationships among the objects, system workflows, core modules if required, and other necessary and critical changes which impact the overall working functionalities of the respective line agencies system.
- Training and workshops wherever necessary as desired by the DWASA.

3) Support and Maintenance Stage:

After System stabilization and User Acceptance Test complete, the firm shall provide free Support and Maintenance support for a period of remaining 1 year after the system is officially launched. The firm shall perform all maintenance activities related to the following:

- Trouble shooting at both Applications level and User level.
- Assist the ICT focal person of the DWASA in operation of the Systems.
- Solution up-gradation such as installation of patches, fixing bugs, minor changes, higher versions of the applications, etc.
- Prompt attention to the issues raised by the DWASA and line Agencies.

a) User Types

Serial	Agency	Users	Functionality
01	DWASA	DWASA Officials	Operation
02	System Admin	IT Personnel	Admin
03	Meter Division	Officer's	Data Entry, Download and print reports.
04	MODS	Officer's	Data Entry, Download and print reports.
05	Revenue Department	Officer's	Data Entry, Download and print reports.
06	Central Store	Officer's	Data Entry, Download and print reports.
07	Meter Labs	Officer's	Data Entry, Download and print reports.

b) Detailed scope of work to be covered as part of this Document:

- Study the existing procedure of the various stages of work of different divisions at DWASA and document it with AS-IS workflow diagrams and get acceptance of the client.
- Apply process re-engineering wherever possible and propose TO-BE workflow diagrams. Obtain a user acceptance on the TO-BE workflow diagrams from the client.
- Prepare Software Requirement Specifications (SRS) or Business Requirement Specification (BRS) document and Software Design Document (SDD) for the computerized web-based system and submit the same along with workflow diagrams.
- On acceptance of the SRS/BRS, design and develop a non-functional prototype that is in line with the requirements indicated so that client gets the feel of the system that is being developed and provides necessary feedback on the frontend aspects.
- On acceptance of the non-functional prototype by DWASA, design and develop an appropriate software package that is in line with the requirements indicated.
- System Development and Deployment
    1. Finalization of Software Requirement Specifications and SRS based on the Acceptance.
    2. Architecture Design for the solution including the Security Level Designs.
    3. Application development of all the system enhancement requirements.
    4. Technical testing of all the components.
    5. Submit the test cases and test plans to the DWASA.
    6. Trial Run of the enhanced system.
    7. All the Requirement, Design, Configurations and Development methodologies have to be well documented and handed over to DWASA.
    8. Well commented source codes, database scripts, test scripts, etc. to be handed over to DWASA.
    9. The framework for system development should not be obsolete but it should be current and progressive.

- Training and Capacity Building
    1. Full involvement of at least 01 ICT Officials from firm to ensure proper transfer of Knowledge in terms of development know-how and sustainability of IT Systems developed as a part of this assignment (for lifecycle of project).
    2. Training of at least 4 Master Trainers from DWASA on the System Operation and functionalities. *(Firm shall conduct training at the locations chosen by DWASA)*
    3. Prepare all the System User Manuals (Both technical and normal user manual) and hand over to DWASA.

- System Stabilization and UAT
    1. Support in terms of System stabilization and making Systems acceptable by the DWASA for duration of 12 months from Project delivery acceptance.
    2. Figma Approved workflow should be fully reflected in UAT.
    3. The contract with the Firm shall not be withdrawn at this phase of the project.
    4. Meet all requirements through UAT preparation and UAT completion.
    5. Support and recommend best practices Solution.

- Support and Maintenance
    1. Support and Maintenance for 01 year from project delivery acceptance.
    2. Solution up-gradation such as installation of patches, fixing bugs, incorporating minor changes, higher versions of the applications, etc.

D. Modules of the System

The system shall have one common page to login for all types of users listed in the table above, however, based on their roles and access rights, only authorized information or data or functions of the system will be accessible.

User Registration

1. The users shall be able to register with necessary information for registration.
2. The system automatically verify user with PIMS.
3. Unauthorized users shall not be able to register to access the system.
4. The system shall notify the applicants on the status of registration.
5. The system shall have Single Sign On supportiveness, User could login with SSO software.

Each module can be separated with the following menus.

- Master – Master will be the most significant part of the software. It will capture the basic information essential for the modules to function correctly. Generally, the masters will be the entered during implementation and they rarely require modifications. Information will be given from master forms the basis for processing the daily activities in the 'Transaction' menu.
- Transaction – Transactions will be the recording of the daily and periodic activities performed by the organization. Reports will be mainly generated based on the recording in transactions.
- Report – Reports will be the presentations of the business details entered into the modules.
- Tools – Tools will be the initial settings required for the module to function. They are usually a one-time entry and based on this working of the module will be defined.

Admin System

Admin system may be aptly defined as the Gateway to DWASA MMS. It may be defined so, as it acts as the entrance into every other system of the said MMS. The main functions of this system will be user management, security management, and housekeeping. Admin systems will accept certain general settings that are needed for routine operations of other systems and take care of the User's ID and User Rights. The objectives of this system will be

- To ensure validity of all input through the system.
- To ensure completeness of all inputs through the system.
- To provide accurate and reliable reports say data entry status, audit trial as per selection for all the modules.

Features of Meter Management System

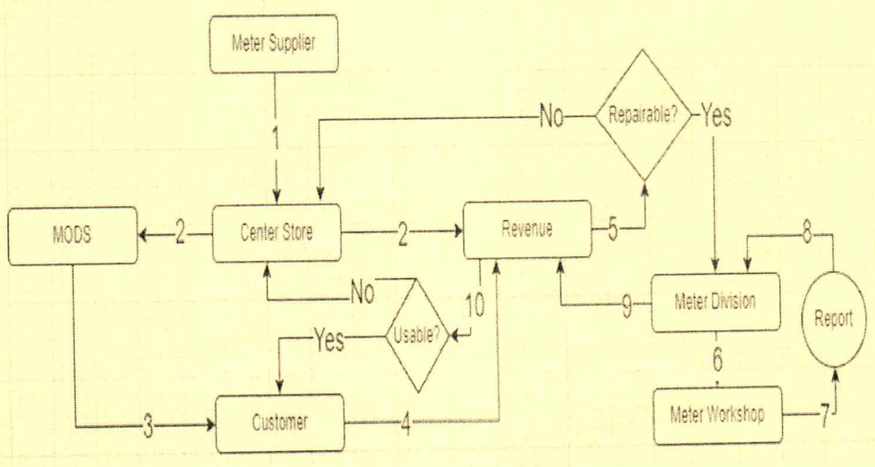
This system will provide valuable information of Employee, Customer, User Meter and Requisition will keep track on details and history. This system will be generated all statutory related reports. The details are given below.

SL	Function	Descriptions
1	**Setup Forms**	
1.1	Departments	Add or update departments View the list of all departments as well as search any record from the list by any field. Departments should be selected during employee setup.
1.2	Designation	Add or update Designations View the list of all designations as well as search any record from the list by any field. Designation should be selected during employee setup.
1.3	Employee Setup	Add/update Employee View the list of all Employee as well as search from the list. Each Employee will setup against department/section and designation.
1.4	Officers	Add or update Officers View the list of all Officers as well as search any record from the list by any field.
1.5	User Setup	Add/update user View the list of all users as well as search from the list. Each user will setup against Department, office, department/section and designation.

1.6	User Role Setup	Add/update user role View the list of all user's role as well as search from the list. Each user role will setup against Department, office, department/section and designation.
1.7	Change Password	User will be able to change his/her own password (if needed)
1.8	SSO Support Setup	User will be able to login in into system with SSO software.
1.9	Meter Unit Setup	Add/update Meter measurement unit View the list of all units and search them
1.10	Meter Category Setup	Add/update Meter category against department View the list of all categories against department and search them
1.11	Meter Sub-Category Setup	Add/update Meter sub-category against department View the list of all sub-category against department and search them
1.12	Meter Setup	Add/update Meter against meter category View the list of all Meter against category and search them
1.13	Workflow Setup	Static Workflow View the list of all workflow as well as search from the list. Each workflow will setup against department/section and designation.
1.13	Laboratory Setup	Add or update Laboratory View the list of all Laboratory as well as search any record from the list by any field.
1.14	Notification Setup	Setup the notification list of each specific department/section (Low stock notification). This notification will show in dashboard. View the list of all notifications and search them [Need discussion]
1.15	Meter Test Criteria	Add or update Test Criteria View the list of all test criteria as well as search any record from the list by any field.
2	**Transaction Forms**	
2.1	Meter purchase & receive (Stock In)	Add all receiving Meter for a department/section against a Customer. So add the Meter to Stock Search by receive id
2.2	Online Requisition	User will able to sign in and create or update requisition for one or more Meter. Requisition can be for entire department/section needs Submit the requisition for approval. During the time of requisition user will be able to see the current stock of the Meter. User will be able to submit requisition according to the priority of the Meter mentioned in the official instruction.
2.3	Verify Requisition	Authorize person will Verify / deny / recommend any requisition List of all approval action taken by specific authorized person (by date) & Search by any field
2.4	Approve Requisition	Authorize person will approve / deny / recommend any requisition List of all approval action taken by specific authorized person (by date) & Search by any field
2.5	Customer ID Management	Using API to bring customer ID from Billing Software
2.6	Meter issue / delivery against Requisition (Stock Out)	Issue Meter against approved requisition. This will also deduct Meter quantity from stock. Search by issue id
2.7	Stock Reconciliation with Approval	Reconcile software stock with physical stock by approval.
2.8	User Management	Create or remove new user from super user or super admin.
3	**Reports**	
3.1	Stock Report	Current status of Meter in stock. This report will be customizable. So that authorized user can see the current status of Meter by searching the Meter name, Meter category or Meter type.
3.2	Customer Report	Customer wise Meter wise requisition history and details log report

3.3	Purchase Information Report (Customer / Meter wise)	Customer wise / Meter wise Purchase Information Report.
3.4	Dashboard with Notification	Meter Notification, Approval Notification Setup, Transaction & Report.
3.5	Email Notification for Stock Limit	Notify stock details through email Specially highlighted on low balanced Meter
3.6	Requisition & Receive Information (Department/section wise)	Details of Requisition information both for department/section wise Details of Receive information both for department/section wise

E. Block Diagram of the Meter Management System Software



F. Description of Flowchart

Center Store:

1. At first the supplied meter entry at supply chain management software lot by lot.
2. Then individual meter is entered into the meter management software, the lot number and other information available into supply chain management system automatically phase form supply chain management system through API.
3. Center store allocate meter to MODS zone and revenue zone through supply chain, which is synchronize through API.

MODS:

1. MODS zone apply for meter through supply chain software, which is auto synchronize with meter software through API.
2. MODS have own meter store at meter software.
3. MODS any assign meter to customer by New Connection and Deep tube well software, which is auto synchronized through API.

Customer:

1. Apply for water connection by New Connection or Deep Tube well. Meter is assigned through meter software.

Revenue Division: At revenue division, there are 4 (four) types of user: i) Revenue Inspector, ii) Assistant Revenue Officer (ARO), iii) Revenue Officer (RO) and iv) Deputy Chef Revenue Officer (DCRO).

1. Revenue zone apply for meter through supply chain software, which is auto synchronize with meter software through API.
2. Revenue zone have own meter store at meter software.
3. Revenue zone any assign meter to customer for broken or out of order meter.

- **Revenue Inspector:**
  1. First Revenue Inspector initiate a letter. This letter could be 2 (two) types a) Letter for repair meter, b) Letter for meter test. Farther Letter for meter test could be two categories I) Meter test according to user application II) Meter test according to WASA self-concern.
  2. This letter is auto generated by filling up required field.
  3. A bar code or QR code is generated on the letter, which can read barcode reader or QR code reader.
  4. After generating this letter the Revenue inspector, forward to ARO/RO/DCRO.
- **Assistant Revenue Officer (ARO):**
  1. After receiving this letter, ARO forward the letter to RO/DCRO.
  2. ARO can back the letter to Revenue Inspector.
  3. Write notes.
- **Revenue Officer (RO):**
  1. Receiving letter from RI/ARO, RO can forward to DCRO.
  2. RO can backward letter to RI/ARO.
  3. Write Notes.
- **Deputy Chef Revenue Officer (DCRO):**
  1. Check the letter.
  2. Forward the letter to the executive engineer of meter division.
  3. Backward the letter to RO/ARO/RI.
  4. Write Notes.

Meter Division: The Meter division is the key department of this project. The meter division have 5 (Five) types of user: i) Executive engineer (XEN), ii) Sub-Division Engineer (SD), iii) Assistant Engineer (AE), iv) Sub-Assistant Engineer (SAE) and v) Computer Operator (CO).

- **Executive Engineer:**
  1. Key role of meter division.
  2. Receive letter from revenue division.
  3. Forward letter to SD/AE/SAE/CO for further processing.
  4. Backward letter to related division.
  5. Write note.
  6. Forward letter to meter workshop.
  7. Generate different types of dynamic report.
- **Sub-Division Engineer (SD):**
  1. Receive letter from XEN.
  2. Prepare file processing.
  3. Forward letter or file to XEN or AE/SAE/CO.
  4. Send file to meter workshop.
  5. Write note.
- **Assistant Engineer (AE):**
  1. Receive letter from XEN/SD.
  2. Prepare file processing.
  3. Forward letter or file to XEN or SD/SAE/CO.
  4. Send file to meter workshop.
  5. Write note.
- **Sub-Assistant Engineer (SAE):**
  1. Receive letter from XEN/SD/AE.
  2. Prepare file processing.
  3. Forward letter or file to XEN or SD/AE/CO.
  4. Send file to meter workshop.
  5. Write note.
- **Computer Operator (CO):**
  6. Receive letter from XEN/SD/AE/SAE.
  7. Prepare file processing.
  8. Forward letter or file to XEN or SD/AE/SAE.
  9. Send file to meter workshop.
  10. Write note.

Meter Workshop: There are 1 (One) user at meter workshop i) Foreman. He will test and generate meter testing and repair report.

1. Receive letter/ file from meter division.
2. Crosscheck the letter from meter division through meter software and hardcopy from revenue division.
3. Generate meter testing and repairing report at predefine format. Send back report to meter division.

** The above information can partially change according to user demand and extra work can be added related to meter software.

G. Technical Requirements

Usage: The system will be a web-based system that will be used for a number of meter situated at different geographically separated locations and separate division. The operations will be performed in a server placed in the premise of the DWASA office as well as suitable web-based hosting systems.

Development Methodology: The consultancy firm should strictly follow some sort of development methodology during the project development.

- The consultancy firm shall carry out assessment on existing list of services and technologies to optimally allocate or determine the product backlogs. It shall also consist of AS-IS and TO-BE workflow.
- The product backlog must consist of related services or processes of different services to efficiently carry out process.
- The consultancy firm shall carry out user requirements of each product backlog separately and get SRS to initiate the implementation of the first sprint.
- The consultancy firm shall also sign off on each test case and present each sprint backlog integrated with the data hub staging environment. This will help in better user acceptance of the system.
- During the enhancement of the services, it should be first tested in the development machines of the consultancy firm by the testers from the consultancy firm side following which access will be provided with the staging environment of the data hub where the services should be thoroughly tested before releasing it to the production environment with live data.
- Only successfully tested product backlog in the staging environment shall be migrated and released in production environment.
- After the user acceptance test succeeds, the system has to be deployed for live operation.

Platform support: The system must be portable. It should run in major operating system platforms such as windows (32/64-bit Windows 2007 and later), Linux, Macintosh, Android (Android 4.0 and later) and iOS. If a browser-dependent system is developed, then the system must be compatible with and well rendered in Microsoft Internet Explorer 11 and above, Mozilla Firefox 50.0 and above, and Google Chrome 55.0 and above.

Responsiveness: The system must run on any screen sizes. Using modern UI frameworks for responsive design is mandatory in major devices like Mobile, PC, Laptop, Notebook, Tab, etc. The system should have the necessary API support for integrating mobile applications in future.

Security: All the resources and documents used in this group will be highly confidential. The consultancy firm must provide SSL (Secure Sockets Layer) certificate (Grade 2) for the site. The selected firm should ensure that the system developed is secured in nature so that both the back end system and front end user are not exposed to any kind of data manipulation and threat to the whole system. Should there be any problem related to it, the firm is responsible to ensure proper security and protocol measures adopted. The consultancy firm must conduct standard testing (security testing, load testing, etc.) and submit its logs and reports to DWASA office. The consultancy firm shall be responsible to fix any vulnerability related to the system within the project contract period.

Data Integrity:

- Automatically cross check for data consistency and perform data validation to maintain data integrity when entering and importing data. Any data integrity problem should be flagged.
- The DWASA System should flag any conditions that impact the data integrity, and revoke any associated transactions.
- Some fields may be mandatory while the others are optional. If mandatory fields are not completed, then the DWASA System should reject the data capture form.
- Data entry checks should be performed wherever possible (e.g. dates, numeric data), with a prompt for the user to correct the information.

Audit Trails: The DWASA System should maintain complete logs of all the activities performed by authorized users. The logs should keep such data like "date and time stamp", name of user, old value, new value, login date and time, log out date and time, etc. For public users, the system may keep the IP and MAC address with date and time stamp.

Data Quality Matrix:

- The firm should develop a publicly accessible Data Quality Matrix which will show the status of updating data.

- The Data Quality Matrix will have graphical and textual representation.

Coding Guideline: The consultancy firm must manage its source code through standard source code management tools like SVN, Git and Trac, so that many programmers can work in parallel without duplication of work. It will also be a useful tool to track previous versions of the codes and will be useful for debugging purposes. The vendor must follow the secured coding guideline prescribed by Bangladesh Computer Council (BCC) e.g. protecting from SQL injection, Cross-Site Scripting (XSS), etc. Don't Repeat Yourself (DRY) principle in coding is recommended.

Naming Convention /standard: In order to keep source code organized, vendors must strictly follow standards for forms, reports, database, triggers, views, stored procedures, coding etc. across the systems they develop.

Hardware Suggestion: A list of available computer, server, networking and other peripherals will provide to the consultancy firm. Based on this specification the system will be operated.

Resource requirements: The resources required by the system should not be too high and must be usable by normal users. The system should be able to perform its operation without hindering the normal usability of the computer system.

Development Language: The consultancy firm should use Java, Vue Js. The application is recommended to be implemented using web based latest frameworks like "Spring Boot" since they adequately address protocols and standards including application security and manageability.

Database System: The database for the application is recommended to be implemented using Oracle Database. The application is recommended to be implemented using latest version of Oracle DB like 19c, 21c. In case, the consultancy firm chooses to propose any third-party tool(s) for the solution for tuning performance, adding security features, or rapid application development, or any specific add-in software package required for analysis and processing data, full justifications and cost must be provided in the proposal.

Extendibility: System should be scalable and upgradeable as and when the number of users and contents increases.

Concurrent Access: Maintain and ensure that the system supports maximum concurrent users.

User Notification: Email and SMS services will be provided by the system to the users for notification. The vendor should provide a free bulk SMS service once a month for the monthly deposit and once a year for the annual statement to every PF member during the one-year support and maintenance period.

General Features: The proposed System should comply/adhere to following technical requirements/functionalities, but not limited to:

- Implement data validation for both client and server
- Don't Repeat Yourself (DRY) principle in coding is recommended
- Implement "Search 'Add I Modify I Delete I Save I Cancel I Preview I Close" operations and auto save if the users are idle for 60 seconds
- Adopt Role-Based Access Control (RBAC) to authorize users' access to system resources based on roles
- Maintain consistent aesthetics and UI of the software
- The web-based software should have provision to support interactive maps. This requirement can be provisioned both from front-end APIs and backend database system design by incorporating appropriate UTF based locale support.

Planning: The vendor must provide a detailed plan of how they will hand over the codebase and developed system to the client after completing the project. The detailed plan should include training schedules and materials such as design docs, user guide, API docs, technical details of techniques, codebase with proper documentation, etc. that need to be delivered.

System Requirement Specification (SRS): A System Requirement Specification (SRS) must be produced. It should identify and document the user requirements & technical requirements of the DWASA system, as follows:

- Provide a detailed specification and description of the functionalities provided by the DWASA Office & its behavior for each required use case and in response to all relevant inputs and conditions.
- The SRS should be submitted to the DWASA Office for approval.

System Design Description (SDD): A detailed System Design should be produced, documented in a system design description (SDD), which provides a detailed description of the module structure and module functionality, the underlying system architecture of the DWASA system including table structure, entity relationship diagrams, object models, page specifications, etc. The SDD should also include a process/data flow diagram of the system.

- The SDD should be submitted to the DWASA Office for approval.

Quality Assurance and Operational Acceptance Testing (OAT)

- The software Development Firm must prepare test plans, operational acceptance criteria and that should be approved by the DWASA Office.
- Conduct user acceptance testing and obtain operational acceptance.
- The DWASA Office will arrange for a group of users to participate in testing of the DWASA System to validate and verify that it meets all the functional requirements as set out in the approved System Requirement Specification (SRS) and System Design Description (SDD).
- These users will first need to be trained on the DWASA System before performing the OAT. Users will work from test scenarios developed jointly by the Software Development Firm and the DWASA Office. As each Scenario is completed, the user will note whether the test was completed satisfactorily and whether there were any errors or unexpected results. The Software Development Firm must correct any OAT issues. Any features or functionalities that fail OAT must be rested once corrected.
- Once OAT has been completed, the Software Development Firm should prepare a summary of the test results and the steps that were taken to address any issues or problems identified. In the event of any disputes about the conduct or result of testing, The DWASA Office will provide to the Software Development Firm in writing a description of the issues with specific recommendations as to how to address them. The Software Development Firm must then take appropriate steps to resolve any issues.

Documentation and user manual: Proper documentation for all the software components and APIs must be supplied in a standard format. User manuals for general and administrative users should also be provided for the developed software. The consultancy firm also has to provide the installation and troubleshooting manual.

System Handover:

- The Software Development Firm will be responsible for transferring system operation to the DWASA Office. In preparation the Software Development Firm must provide comprehensive training to the key officials before the system transfer. The Software Development Firm will provide a checklist of handover items with the DWASA Office so that it can be verified that all required tasks are completed before transfer of the DWASA System.
- Formal acceptance of the DWASA System will be indicated by the issuance of an Operational Acceptance Letter by the DWASA Office.

System Ownership:

- The DWASA System that is designed and developed during this assignment will be owned by Dhaka Water Supply & Sewerage Authority (DWASA).
- The Software Development Firm must submit all system related documentations and the most updated source code, without any preconditions to the DWASA Office.
- The consultancy firm will have no right to commercially use or apply the software elsewhere.

H. Project General Requirements

Installation, Configuration:

- The system should be installed on a standard server (For UAT DWASA UAT server & for live DWASA Live server)
- The domain name has to be configured
- The cache should be configured
- Standard SSL certificates have to be configured
- Attachment storage should be configured
- The replication system has to be configured.

SMS Service:

- The SMS services will be provided by the system to the users for notification.

Backup and Restoration:

- The System should support the Standard Periodic and On-Demand backup.
- The System can be restored from the backup if needed,

Maintenance and Troubleshooting:

- The maintenance shall include that the web-based software designed and developed by the firm under this Contract shall have no defect arising from the design or workmanship or from any act or omission of the consultancy firm that may develop under normal use of the supplied software. The consulting firm shall specify normal operating environmental conditions in the Contract.
- The consulting firm has to provide a comprehensive onsite support for maintenance and troubleshooting related issues for one year for free of cost from successful submission. The maintenance period will be effective upon the issuance of the Operational Acceptance Letter by the DWASA Office. During the maintenance period the Software Development Firm must maintain the warrantee procedure.
- DWASA System against defects in the operation and functionality of the DWASA System and they must solve the issues if any.
- The DWASA shall promptly notify the consultancy firm in writing or verbally of any claims arising under this warranty. Upon receipt of such notice, the consultancy firm shall, within the maintenance period and with all reasonable speed, repair or replace the defective systems, without costs to the DWASA and within the time specified and acceptable to the DWASA.
- During the maintenance period, the consultancy firm will provide all updates, patches/ fixes, version upgrades and new versions if any within 7 days of their availability and should carry out installation and operationalization of the same at no additional cost to the DWASA.
- If the Consultancy firm, having been notified, fails to rectify the defect(s)/bug(s) within the period specified, the DWASA may proceed to take reasonable and remedial action as may be necessary as per this document.
- After the free maintenance period is over, the consulting firm would provide the maintenance support under a Service Level Agreement (SLA). The vendor must state the detailed service procedure and payment rate in the proposal.
- The consultancy firm hereby represents and warrants that the system so developed will not infringe any Intellectual Property Rights held by any third party and that it has all necessary rights, or at its sole expense shall have secured in writing all transfers of rights and other consents necessary to make the assignments, licenses and other transfers of Intellectual Property Rights and the warranties set forth in the Contract, and to own or exercise all Intellectual Property Rights as provided in the Contract. Without limitation, the consultancy firm shall secure all necessary written agreements, consents and transfers of rights from its employees and other persons or entities whose services are used for development of the system.

- The system proposed to be developed and maintained by the consultancy firm represents a complete, end-to-end integrated solution meeting the DWASA Line Agencies' requirements and will provide the functionality and performance, as per the terms and conditions.

Confidentiality of Data:
Since some of the Agency specific information, findings and legacy data handled by the consultancy firm during the engagement of the Project assignment is classified and restricted in nature, all the team members from the consultancy firm must sign a Non-Disclosure Agreement with DWASA.

Up-gradation:

- The software must have the up-gradation facilities if the client changes its requirements.
- In case of system up-gradation or changing requirements, the client will pay the consultancy firm after warranty period based on mutual understanding and the volume of work.

User Registration/ Password Recovery/ Access Control/ SSO support:

- There should be many types of users. All of the authorized user controlled by user ID & password.
- DWASA System should keep authorizing the user's minimum information to register them into the system. There should be a password recovery system using two factor authentications without admin help.
- User can also login into this system through SSO support. SSO API need to be included.
- Adopt Role-Based Access Control (RBAC) to authorize users' access to system resources based on roles
- API to complaint Management system so that complaint management system can get information against meter id.

System Administration:

- System Administrator should have a control panel to configure the system.
- The system should provide a user-friendly Look and feel Dashboard.

System APIs:

- Need to develop Supply Chain API.
- Need to develop API for Fixed Asset.
- An API connection should essential with PMIS for user verification.
- The system also connected with DWASA "New Connection Software" through API. We will call the API to collect data.
- The system further connected with DWASA "Private Deep Tube well Connection Software" through API. We will call the API to collect data.
- The system should connected with DWASA billing software through API.

SSO Support:

- The system should support Single Sign On (SSO).
- Any DWASA id holder can easily sign in into this MMS through SSO software.

Report Generation:

- The system should be capable of generating Dynamic [Parameter change] Reports based on chosen attributes.
- Report Header and Footer should be customizable.
- The system should integrate the graphical representation for the visualization of data. e.g. Bar chart, Pie chart, Line chart, etc.
- All Basic Forms should be generated by the system in appropriate templates.
- All the reports and forms should be downloadable and printable.
- Standard suitable reporting tool shall be used for reporting.

Data Import and Export:

- The system should be capable to import data from .xlsx or .csv files
- Documents / Pictures / Files should be attachable to the system.
- The system should be capable of exporting data in .xlsx, .doc / .docx, .csv and .pdf format.

Data Backup

- The system should backup it's date 1 times a day.
- Previous ten days will store into backup server.

Data Searching and Sorting:

- The system should provide a dynamic searching facility based on chosen attributes.
- The searched results (data) should be in standard sorted order.
- The system should have the searching facilities based on the specific range of the attributes.
- The system must provide efficient and optimized searching and sorting facilities.

Acceptance criteria:

- Signed The scope of the project should be fully delivered.
- The DWASA will accept the commissioning and project completion only after getting an acceptance letter from all respective division.
- A team consisting of representatives from the DWASA, selected IT consultancy firm, and ICT Officials from consultancy firm will verify if all the components of the solution are working fine and if the stakeholders are satisfied with the system enhancement.

Quality of Work:

- The consulting firm shall ensure quality while implementing the system at all times. The consultancy firm will evaluate this in the long run.

Change Management Contract: The Consultancy firm shall provide post implementation support under a Change Management Contract. The change management shall be need based and shall include:

- Incorporation of new requirements due to change in rules and procedures at the clients site.
- The major changes will be considered as new scope but minor changes will not come as new changes.

I. Experience, Resources and Delivery Capacity Required

The Firm shall be evaluated using, but not limited to, the following minimum criteria:

- The consulting firm must have legal capacity to signing the contract.
- The firm shall not have any litigation history of the last 3 years.
- The firm must have valid software firm registration, valid up-to-date Trade License, TIN, BIN certificate, Income tax return of last 1 years, VAT Registration certificate, Bank solvency certificate and project completion certificate from client.
- The Software Firm must have minimum 03 (Three) years of working experiences in Software Development as a legally registered entity in Bangladesh.
- The Software Firm must have successfully executed at least 03 (Three) projects of software/solutions in Government/Semi-Government/Autonomous/Multinational organizations in Bangladesh within the last 3 (three) years.
- The Software Firm must have at least one software development experience which minimum contract value 1 (One Crore) Crore in government/semi-government/Autonomous/Multinational of nationwide project within last 03 (three) years. (With specific certification).
- The Software Firm must have BASIS membership Certificates.

J. CV Qualification

Sl.	Designation	Month	Qualification (Education and Experience)	No. of Staff
1	Project Manager	5	Bachelor's degree in Computer Science and Engineering. Ten (10) years of professional working experience in a similar project. Ten (10) years of demonstrated experience. • Having PRINCE2/PMP will get preference. • Strong communication skills in presenting, discussing, and resolving difficult issues. Ability to work efficiently and effectively in a multidisciplinary team.	1
2	Business Analysts	1	Bachelor's degree in Computer Science and Engineering. Five (5) years of professional work experience in the role, or in a similar one.	1
3	Senior Software Engineer	5	Being involved in all aspects of software development lifecycle from requirements, design, and build through deployment. • Translating business requirements into working foundational components for platform thus ensuring functional and non-functional aspects are met. • Guide a pool of Software Engineers including, programmers, analysts and support specialists. • Architecting platforms that are highly scalable, responsive and would serve as a foundation for building key enterprise components. • Documenting architectural standards, best practices and mentoring application teams on developing highly distributed, resilient and responsive applications. • To work with deployment and infrastructure teams to provision application software and platform components. • Effectively identifying opportunities for change, implements change and introducing new concepts, procedures, policies and tools while providing a clear explanation of benefits and purpose. Qualification and Experience • At least Bachelor's Degree in computer science/Computer Science & Engineering or IT related Subjects. • Must have at least 5 years of Practical experience of working in software development out of which at least 3 years of experience in Java and related frameworks (Spring MVC, Spring Boot, Hibernate etc) • 3+ years of practical experience in React JS,Vue.js. • Proficient with Software, Debugging, software customization, HTML/CSS, scripting language (e.g. Linux shell scripting) etc. Having strong problem-solving skills and ability to work independently or in a team	1
4	UI/UX Designers	2	Bachelor's degree and Three (3) years of UI/UX design experience for digital products or services. A portfolio of professional UI/UX design work for both web and mobile platforms. Working knowledge of the following technologies and software: **Figma**.	1

5	Software Engineer	3	Bachelor's degree in Computer Science and Engineering. Three (3) years of professional work experience in the role, or in a similar one, such as Application Developers. 3 years of practical experience of using **Java, Spring Boot, Vue Js, Oracle Database**. etc. In-depth knowledge of the services and concepts of the web architecture. Ability to set up and configure the web 5environment. Ability to deploy and implement web solutions. Ability to design scalable and accessible web-based applications. Working knowledge of managing and monitoring the performance of web applications.	3
6	Database Administrator	0.5	Bachelor's degree in Computer Science and Engineering. Must have Oracle Certification Program (OCP) 19c/21c database administrator certificate. Five (5) years of professional work experience in a similar role. In-depth knowledge of designing scalable and highly available web database solutions. Demonstrated large-scale project development and leadership skills. Ability to manage a solution that can span Inutile database solutions. Ability to test high availability and disaster recovery strategies periodical.	1
7	Software Testing Engineer	1	At least Bachelor's Degree in computer science/Computer Science & Engineering. Must have 2 years of Practical experience of software quality assurance and testing. Practical experience of using automated testing tools (i.e **JMeter, Selenium, Rational Rose or equivalent**) is must. Having strong problem-solving skills and ability to work independently or in a team.	2
8	Support Engineer	5	Bachelor's degree in any business-related fields. Three (3) years of professional work experience in the role, or in a similar one. In-depth knowledge of the handling live chats.	2
9	Technical Document Writer	1	Bachelor's degree in Computer Science and Engineering. Three (3) years of professional work experience in technical document writing.	1

K. Timely Completion

Project Development:

- The entire work of software development and testing should be completed within **5 (Five) months** from the date of award of work.

Maintenance and Support:

- The maintenance period start after the successful handover of software and all deliverable. The vendor will have to provide 1 (One) years of maintenance and support for the system for 1 (One) year in consultation with DWASA after the completion of the maintenance period.
- The vendor will be required to provide dedicated and continuous maintenance support to fix identified bugs. The Client to the vendor will report the bugs via email.

The expected schedule of the deliverables is given below:

a) Detailed Deliverables from the Consultancy firm:

The lists of deliverables from the selected consultancy firm are as follows:

- System Requirement Specification (SRS) document containing detailed requirements captured based on User and Functional requirement gathering exercise conducted by Consultancy firm with each agency and analyzed including Functional Requirements, Interface Specifications, and Application Security Requirements.
- High Level Software Design Document including Software Architecture Design, Logical and Physical Database Design (ER Diagrams) etc.
- Low Level Software Design document including Programming Logic, Work Flow,
- Data Flow Diagrams (DFDs) etc.
- Security Level Design document.

b) Application Developments

- Well-commented Source Code (Application development) for all system enhancement work.
- Test Plans and Test cases (including Unit Test Plan, System/Integration Test Plan, User Acceptance Test Report, Security Test Plan, Load Test Plan, Regression Test Plan)
- Unit Testing
- Load Testing
- Integration Testing
- Implementation of Security Policy
- Testing Documentation (including details of defects/bugs/errors and their resolution)
- All database scripts.
- Setup and Release notes for each new release.

c) User Training

- Training Manuals
- User Manuals for all the enhanced systems.
- Systems Administration Manuals – Installation, Maintenance, and MIS reporting for all systems.
- Trainings and Workshops

d) Compliance to IT standards and protocols

- All the components developed shall be as per the IT standards and protocols.

e) Project Sign-Offs

- SRS Sign-off
- Design Documents and Prototype Acceptance Sign-off
- Delivery Sign-off
- UAT Sign-off
- Project Exit Sign-off

L. Project Management Review

The DWASA would review the progress of the project at regular intervals. The selected consultancy firm should send weekly progress reports & monthly status reports to the DWASA. The selected consultancy firm has to obtain necessary concurrence from the DWASA if there are any slippages in the deliverables as mentioned in the earlier. The review would be supported by project ICT focal officer.

M. Training and Knowledge Transfer

The consulting firm will be responsible for the knowledge transfer on the enhanced systems, not limited to:

- Train and engage the ICT personnel from the consultancy firm during the entire system development cycle to ensure that proper transfer of knowledge is being provided to the DWASA.
- Before the commencement of the project, the system developer should in advance train the assigned ICT Officials for a minimum of one week on the use of framework, on which the system will be developed.
- System developers should work collaboratively with ICT Officials, so that the transfer of knowledge can be very smooth. Further, as ICT Officials represent the agency, the consultancy firm's developer is mandated to report to assigned ICT Officials weekly on any matter related to system development, and review the progress accordingly before forwarding to the project management.
- System developers should explain the detailed logical sequence of code flow between database and corresponding classes, and its functions within the code to the assigned ICT Officials, including the interface design. Similarly, the System Developer should also explain database design with assigned ICT Officials, and explicitly mention the relationship of tables inside the Database to the assigned ICT Officials.
- Conduct for key agency personnel from DWASA comprehensively and adequately with well-prescribed manuals and references.
- The training shall be conducted at DWASA Conference Room or any previously select venue.
- Adequate training of Master Trainers shall be conducted only after testing and acceptance of the system by DWASA. The Consultancy firm shall provide relevant training materials to the master trainers from the DWASA with no escalation in the cost.

SL NO	User Type	Number of User	Days	Total Count
A	B	C	D	E=C*D
1	User level (U)	46	1	46
2	Technical (T)	15	2	30
	Total=	61	3	76

The vendor will provide refreshment (within 500/- Tk), allowance (1000/- Tk) per trainee and training Kits (bag, Notepad, pen, training manual etc. worth 500/- Tk).

N. Facilities to be provided by the Client

The DWASA would provide the following facilities:

- The DWASA shall provide access to its network infrastructure and server.
- The DWASA will provide a technical committee (Technical Working Committee and IT Support team) and will liaise with the consultancy firm for any technical aspect.
- The DWASA shall make the necessary logistical arrangements for training like training room, computer.

O. Time Schedules

The implementation schedule for the project is as following:

- The consultancy firm needs to submit a detailed project plan on the commencement of the project.
- The DWASA may also prioritize the deliverables and can ask the consultancy firm to incrementally implement the high priority items initially during the Development Phase. The DWASA would conduct periodic reviews and audits of the work done by the consultancy firm.

P. Payment Schedule

Payments shall be made in line with agreed-on outputs according to the following schedule: if

The payment modality for software / system development may be as per following phases:

- **Ten (10)** percent of the contract amount will be paid upon submission and acceptance of the **inception report.**
- **Twenty Five (25)** percent of the contract amount will be paid upon submission and acceptance of the **live *system* deployment** report.
- **Twenty** (**20**) percent of the contract amount will be paid upon submission and acceptance of the **Deployment of other services, Training.**
- **Thirty** (**30**) percent of the contract amount will be paid upon submission and acceptance of **full-fledged live** operation report.
- **Fifteen** (**15**) percent of the contract amount will be paid after successful completion of (development and operation phase and warranty phase) and upon submission and acceptance of project/whole billing software completion report.

- ***Inception Report:*** *At the end of the second month from the date of the commencement.*

-Review the Terms of Reference and propose methodology of the project.

- Selection of Tools and technologies for the project

- Requirement Analysis and Design

- Preliminary study for existing system of DWASA.

- Requirement gathering through consultation with DWASA.

- Gap analysis of existing Billing system, Hardware, Network and Security

-Assessment of hardware, network and security considering all related software and hardware requirement.

-Detailed discussions with concerned DWASA officials to understand the overall objectives of the assignment.

-System should be robust, responsive and support at least 2000 concurrent users per instance and scalable as per need.

- Prepare and finalize business requirement specification (BRS).

-Prepare detailed software requirement specification (SRS).

-Prepare and finalize Functional Requirement Specification (FRS)

-Prepare HLD and LLD

-Prepare detailed work plan and staffing plan for the system development.

-Development method, technology (tools, language and database requirements), technical approaches & standards (List of Standards, Tools & Technology plan, Security and Data Privacy Plan, User Management Plan, Integration Plan, UI/UX Plan, etc)

-Project implementation schedule with indicative timeline (Gantt chart)

-Work distribution and Team Composition Plan

-Risk Management Strategic Plan and quality control mechanism.

-Quality Assurance & Testing Plan

-Audit Plan

- reconciliation plan

-Pilot implementation plan

-Knowledge transfer plan

-Project Deliverable plan

-Data Management and migration plan

-Support and maintenance plan

-Performance Review plan

-Change Request plan.

-Demonstrate with mock/ dummy UI on the whole system.

- **Live *system* deployment:**

- Data migration is done.

- Software and other system integration deployment is done in live system.

- Changes required that not specified in the ToR will also be deployed in the live system.

- Deployment of API integration in live system.

-Deployment of other system integration in live system.

-Development and customization Phase

-Module Development and Testing

-Module Reviewed by DWASA

-Testing UAT

- Necessary reports deployment in live.

-UAT Phase

-Data Migration and Go-Live Phase.

- Deployment and Piloting

- **Deployment of other services, Training:**

-Training of client's personnel (Technical and other users)

- Live deployment of other service deployment required to fulfill the project.

- Incorporation of necessary Changes for completeness of the project which are not specified in the ToR.

- Deployment of reconciliation methodology.

- Technology handed over to DWASA IT personnel.

- All the required development processes/services must be completed in this stage.

- **Full-fledged live operation report:**