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CLIENT

CLIENT

IDA Credit No.:

BIDDING DOCUMENT

RFP No.: []

Procurement of Performance-Based Leakage Reduction and Management Services (Output-based Service Contract)

Issued on:

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

PREFACE

1. This bidding document for **Performance-Based Leakage Reduction and Management** has a general structure based on the **World Bank's Standard Bidding Document (SBD) for Works (March 2003)** in general and the World Bank's sample bidding document for **Performance-Based Contract for the Management and Maintenance of Roads (February 2002)**. Given the specific characteristics of performance-based leakage reduction services, significant modifications have however been made in most sections of the document including several aspects found in the **World Bank's Standard Bidding Documents for Supply and Installation (March 2003)**. In particular, the *General Conditions of Contract* have been rewritten in order to take into account the specific nature of the services to be provided by the Contractor, which go much beyond the mere execution of pre-defined physical works and to include the "output" basis in the contract. The contract covers an **array of activities needed to reduce and maintain leakage levels**, including many activities related to the management and periodic evaluation of DMA (District Metered Area) data. It further includes carrying out **DMA Establishment Works** that form the basis for performance based leakage reduction, **System Expansion Works** that might become necessary because of new customers applying for connections as well as a provision for **Emergency Works and Unforeseen Works**.

2. This preface summarizes the concept of Performance-Based Leakage Reduction and Management. For legal purposes the text of the main body of this document is binding and takes precedence over this preface.

3. Performance-based contracting for Leakage Reduction and Management is a new concept designed to increase the efficiency and effectiveness of water distribution networks and related operations. It should ensure that the leakage will be significantly reduced and the reduced leakage levels will be maintained over the entire period of the contract which is normally several years. This type of contract significantly expands the role of the private sector, from the simple execution of works to the management and conservation of water distribution networks.

4. In **traditional leakage reduction contracts**, the Contractor is responsible to carry out leak detection surveys and is paid for example per length of pipeline surveyed or (even worse) per staff day. While this modality often brings improvement over the "do nothing" scenario, the results are in many cases still less-than-optimal. The problem is that the Contractor has the wrong (or no) incentive and no obligation whatsoever to achieve maximum savings. And since repairs are traditionally carried out by a third party, the leakage reduction Contractor is not accountable for anything and the results are sometimes not satisfactory.

5. The **Performance-Based Leakage Reduction and Management Contract** tries to address the issue of inadequate incentives. During the bidding process, Contractors compete among each other by proposing a (relatively small) fixed quarterly lump-sum fee and a (substantial) performance fee per volume of water saved. It is important to understand that Contractors are not paid directly for "inputs" or physical works (which they will undoubtedly have to carry out), but for the "output," volume of leakage reduced. The quarterly lump-sum remuneration and the performance fee paid to the Contractor will cover all physical and non-physical works and services and all materials provided by the Contractor, except for system expansion works and unforeseen emergency works which would be remunerated separately. The DMA Establishment Works which have been explicitly specified by the Employer in the contract would be quoted on the basis of measurable output quantities and paid as performed. One fundamental feature of the performance-based contract is that the Contractor is

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responsible for designing and carrying out the actions he believes are necessary in order to comply with the contract. Under the performance-based contract, the Contractor has a strong financial incentive to be efficient. In order to maximize profits, he must reduce his activities to the smallest possible volume of intelligently designed interventions, which nevertheless ensure that pre-defined outputs are achieved and maintained over time. This type of contract makes it necessary for the Contractor to have a good management capacity. Here, "management" means the capability to define, optimize and carry out in a timely basis the physical interventions which are needed in the short, medium and long term, in order to guarantee that the leakage reduction will be done as efficiently as possible. In other words, within the contract limitations and those required to comply with local legislation, technical and performance specifications and environmental and social regulations, the Contractor is entitled to independently define: (i) what to do, (ii) where to do it, (iii) how to do it, and (iv) when to do it. The role of the Employer is to enforce the contract by verifying achieved leakage reduction, as well as all other legislation and regulations the Contractor must comply with.

6. Reducing and managing leakage includes routine and periodic tasks. It is expected that the use of private specialized firms under performance-based contracts will unleash significant efficiency gains, and stimulate innovation in comparison with traditional water utility practices.

7. Under the terms of the contract, the Contractor will also be responsible for the continuous monitoring and control of leakage levels of all DMAs included in the contract. This will not only be necessary to fulfill the contract requirements, but it is an activity which will provide him with the information needed in order to be able (i) to know the degree of his own compliance with the contract and the achieved savings, and (ii) to define and plan, in a timely fashion, all physical interventions required to assure that leakage levels never increase over the contractual limits. Under the performance-based contract modality, the Contractor will not receive instructions from the Employer concerning the type and volume of works to be carried out. Instead, all initiative is given to the Contractor who should do whatever is necessary and efficient to achieve the leakage reduction levels required. This concept is expected to lead not only to significant efficiency gains, as mentioned earlier, but also to technological innovation.

8. The beneficiaries of the new concept are expected to be the customers, the water supply company, and the Contractors or other private sector enterprises. In a wider sense, future generations will be able to benefit from a better preservation of past investments in the water distribution network. Customers will be able to know the service level they will get for their water tariff. The Water Utility should benefit from the cost-efficient water loss reduction and will be able to sell the saved volume of water to existing or new customers. For Contractors and other private sector enterprises, the new type of contracts should open up new business opportunities, in which longer contract periods provide a more stable business environment. But it may be the future generations who will perhaps benefit most, since they will not have to pay for excessive capacity of new water production facilities which would be required to pump more and more water in the leaky distribution system.

9. Although design of the works to be carried out is under the responsibility of the Contractor, this type of procurement requires good preparation engineering work. It is necessary to prepare a good set of information on the actual conditions of the distribution network and the expected leakage levels.

10. Bidders will present their financial offer for: (i) the DMA Establishment Works (if so required in the bidding data), using a BoQ in the form of a "priced activity schedule"; (ii) the core element of the contract, the leakage reduction and management services in the form of a quarterly fixed-fee and a volumetric performance fee; (iii) unit prices for system expansion works; as well as (iv) unit prices and a daywork schedule for emergency and unforeseen works ordered by the Project Manager.

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Invitation for Bids (IFB)

Section I - Page 1

Section I. Invitation for Bids (IFB)

INVITATION FOR BIDS

CLIENT
CLIENT, COUNTRY

[DATE]

To: _____ *[name of Contractor]*

Reference: **IDA Credit No.** []

Contract Name: **Performance-Based Leakage Reduction and Management Services**

Identification No.: []

Dear Sirs:

We hereby inform you that you are prequalified for bidding for the above cited contract. A list of prequalified Applicants is attached to this invitation.

Domestic preference will not be applicable.

We now invite you and other prequalified Applicants to submit sealed bids for the execution and completion of the cited contract.

You may obtain further information from, and inspect and acquire the bidding documents at our office at:

CLIENT
ADDRESS
CONTACT DETAILS

A complete set of bidding documents may be purchased by you at the above office, on or after [DATE] and upon payment of a non-refundable fee of US\$ [200].

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Invitation for Bids (IFB)

Section I - Page 2

The fee can be paid by direct deposit/transfer onto the CLIENT's account in:

Commercial Bank of COUNTRY – CLIENT Branch
ADDRESS

On the request of bidders the documents will be sent by courier. However, CLIENT must not be hold responsible for late delivery or loss of the documents dispatched.

All bids must be accompanied by a security in the form and amount specified in the bidding documents, and must be delivered to:

CLIENT, COUNTRY

at or before **10:00 local time on DATE** [12 weeks after issuance of Bidding Documents]. Bids will be opened at the above office at **10:00 local time on [DATE]** in the presence of bidders' representatives who choose to attend.

Please confirm receipt of this letter immediately in writing. If you do not intend to bid, we would appreciate being so notified also in writing at your earliest opportunity.

Yours truly,

Authorized signature _____

Name and title _____

Employer : []

LIST OF PREQUALIFIED APPLICANTS

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

.....

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Instructions to Bidders (ITB)

Section II - Page 1

Section II. Instructions to Bidders (ITB)

NOTES ON THE INSTRUCTIONS TO BIDDERS

Section II provides the information necessary for bidders to prepare responsive bids in accordance with the requirements of the Employer. It also gives information on bid submission, opening, and evaluation, and on the award of Contract. The provisions in Section II should be used unchanged.

Section III, Bidding Data, consists of provisions that supplement, amend, or specify information or changes to Section II that are specific to each procurement.

Matters governing the performance of the Contractor under the Contract, payments under the Contract, or matters affecting the risks, rights, or obligations of the parties under the Contract are not included in this section, but rather in the General Conditions of Contract, Special Conditions of Contract, and Technical Specifications. If duplication of a subject is inevitable in the different sections of the documents, the Employer should exercise care to avoid contradiction or conflict between clauses dealing with the same topic.

These Instructions to Bidders will not be part of the Contract.

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Instructions to Bidders (ITB)

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Instructions to Bidders (ITB)

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A. GENERAL

1. Scope of Bid

- 1.1 The Employer, as defined in the Bidding Data, hereinafter “the Employer,” wishes to receive bids for the Works and Services identified in the Bidding Data for a ***Performance-Based Leakage Reduction and Management Contract***. The Contract will cover the parts of the distribution system indicated in the Bidding Data and consisting of:
- (a) The Contractor shall undertake Works to establish DMAs (District Metered Area) as described in Bid Data. Number and location of DMAs as specified in TSP (Technical Specifications) Part B;
 - (b) Leakage Reduction and Management Services are the core element of this contract as described in Bid Data;
 - (c) System Expansion Works include the installation of service connections to new customers inside the DMA as described in Bid Data; and
 - (d) The contract offers a provision for Emergency and Unforeseen Works as described in Bid Data.
- 1.2 The successful bidder will be expected to carry out the Works and Services during the period stated in the Bidding Data.
- 1.3 Throughout these bidding documents, the terms “bid”, “tender” and “proposal” and their derivatives (“bidder/tenderer”, “bid/tendered/proposed”, “bidding/tendering”, “bidding document/request for proposal”, etc.) are synonymous, and *day* means calendar day. Singular also means plural.

2. Source of Funds

- 2.1 The Borrower named in the Bidding Data has applied for or received a loan or credit (hereinafter called “loan”) from the International Bank for Reconstruction and Development or from the International Development Association (hereinafter interchangeably called “the Bank”) in various currencies equivalent to the amount in U.S. dollars indicated in the Bidding Data toward the cost of the Project specified in the Bidding Data, and the Borrower intends to apply a part of the proceeds of this loan to eligible payments under the Contract for which these bidding documents are issued.
- 2.2 Payments by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with the terms and conditions of the Loan Agreement, and will be subject in all respects to the terms and conditions of that Agreement. The Loan Agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or for any import of equipment, plant, or materials, if such payment or import, to the knowledge of the Bank, is prohibited by a decision of the United Nations Security Council taken

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Instructions to Bidders (ITB)

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under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan Agreement or have any claim to the loan proceeds.

- 3. Eligible Bidders**
- 3.1 This invitation to bid is open to any bidder (including all members of a joint venture and all subcontractors of a bidder) meeting all four of the following requirements:
- (a) A bidder shall be from any country as defined under the *Guidelines: Procurement under IBRD Loans and IDA Credits* (hereinafter referred to as the Guidelines).
 - (b) A bidder shall not be affiliated with a firm or entity
 - (i) that has provided consulting services related to the Works to either the Employer or the Borrower during the preparatory stages of the Works or of the Project of which the Works form a part, or
 - (ii) that has been hired (or is proposed to be hired) by the Employer or Borrower as Project Manager (Engineer) for the contract.
 - (c) A bidder shall be prequalified for the contract as notified by the Employer.
 - (d) A bidder shall not be under a declaration of ineligibility for corrupt or fraudulent practices issued by the Bank in accordance with Sub-Clause 40.1 (c).
- 3.2 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer as the Employer shall reasonably request.
- 3.3 Majority publicly owned enterprises from the Borrower country may be eligible to qualify if, in addition to meeting all the above requirements, they are also legally and financially autonomous, operate under commercial law and are not a dependent agency of the Borrower or Sub-Borrower.
- 4. Eligible Materials, Plant, Supplies, Equipment, and Services**
- 4.1 The materials, Plant or Contractor's Equipment, other supplies, and services to be supplied under the Contract, shall have their origin in any country pursuant to Section XII Eligible Countries, and all expenditures made under the Contract will be limited to such materials, Plant or Contractor's Equipment, other supplies, and services.
- 4.2 For purposes of Sub-Clause 4.1 above, "origin" means the place where the materials, plant, equipment, and other supplies are mined, grown, produced, or manufactured, and from which the services are supplied.
- 5. Qualification of the Bidder**
- 5.1 Bidders shall, as part of their bid:
- (a) submit a written power of attorney authorizing the signatory of the bid to commit the bidder; and

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Instructions to Bidders (ITB)

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- (b) update any information submitted with their applications for prequalification which has changed, update in any case the information indicated in the Bidding Data, and continue to meet the minimum criteria set out in the prequalification documents.

As a minimum, bidders shall update the following information:

- (a) evidence of access to lines of credit and availability of other financial resources;
- (b) financial predictions for the current year and the two following years, including the effect of known commitments;
- (c) work commitments acquired since prequalification;
- (d) current litigation information; and
- (e) availability of critical equipment.

5.2 Bids submitted by a joint venture of two or more firms as partners shall comply with the following requirements:

- (a) the bid shall include all the information listed in Sub-Clause 5.1 above;
- (b) the bid security, the bid, and in case of a successful bid, the Agreement, shall be signed so as to be legally binding on all partners;
- (c) one of the partners shall be nominated as being in charge, and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the partners;
- (d) the partner in charge shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture and the entire execution of the Contract, including payment, shall be done exclusively with the partner in charge;
- (e) all partners of the joint venture shall be liable jointly and severally for the execution of the Contract in accordance with the contract terms, and a statement to this effect shall be included in the authorization mentioned under (c) above, as well as in the bid and in the Agreement (in case of a successful bid); and
- (f) a copy of the Joint Venture Agreement entered into by all partners shall be submitted with the bid. Alternatively, a Letter of Intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all partners and submitted with the bid, together with a copy of the proposed agreement.

5.3 Bidders shall also submit proposals of work methods and schedule in sufficient detail to demonstrate the adequacy of the bidders' proposals to meet the Technical Specifications and the completion time referred to in Sub-Clause 1.2 above.

5.4 Domestic bidders, individually or in joint ventures, applying for eligibility for a 7½ percent margin of preference in bid evaluation shall supply all information required to satisfy the additional criteria for eligibility as

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Instructions to Bidders (ITB)

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described in Clause 33.

- 6. One Bid per Bidder**
- 6.1 A firm shall submit only one bid in the same bidding process, either individually as a bidder or as a partner in a joint venture. No firm can be a subcontractor while submitting a bid individually or as a partner of a joint venture in the same bidding process. A firm, if acting in the capacity of subcontractor in any bid, may participate in more than one bid, but only in that capacity. A bidder who submits or participates in more than one bid will cause all the proposals in which the bidder has participated to be disqualified.
- 7. Cost of Bidding**
- 7.1 The bidder shall bear all costs associated with the preparation and submission of his bid, and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 8. Site Visit and Data Room**
- 8.1 The bidder is encouraged to visit and examine the areas in which the services of this contract shall be carried out and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for the services to be provided under the contract. The costs of visiting the Site shall be at the bidder's own expense.
- 8.2 In addition to that, a brief official site visit will take place on the date specified in the Bidding Data.
- 8.3 The Employer has arranged a Data Room in which the bidder can find valuable information. A copy machine is available and the copies of all documents can be made on the bidders request, but copies are payable at a market rate. Some documents may be given to the bidder in electronic form. Location and Opening time of the Data Room can be found in the Bidding Data. The Bidders shall inform the Employer in advance of their visits to the Data Room.

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B. BIDDING DOCUMENTS

- 9. Content of Bidding Documents**
- 9.1 The bidding documents are those stated below and should be read in conjunction with any Addenda issued in accordance with Clause 11:
- Section I. Invitation for Bids
 - Section II. Instructions to Bidders
 - Section III. Bidding Data
 - Section IV. General Conditions of Contract
 - Section V. Special Conditions of Contract
 - Section VI. Technical Specifications
 - Section VII. Form of Bid, Appendix to Bid, and Bid Security
 - Section VIII. Bill of Quantities
 - Section IX. Form of Agreement, Forms of Performance Security, and Bank Guarantee for Advance Payment
 - Section X. Drawings
 - Section XI. Disputes Settlement Procedure
 - Section XII. Eligible Countries
- 10. Clarification of Bidding Documents**
- 10.1 A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing (hereinafter, the term “in writing” is deemed to include email and facsimile) at the Employer’s address indicated in the Bidding Data. The Employer will respond to any request for clarification that he receives before or at the day of the pre-bid meeting within 10 working days. Copies of the Employer’s response will be forwarded to all purchasers of the bidding documents, including a description of the inquiry but without identifying its source.
- 11. Amendment of Bidding Documents**
- 11.1 At any time prior to the deadline for submission of bids, the Employer may amend the bidding documents by issuing Addenda.
- 11.2 Any Addendum thus issued shall be part of the bidding documents pursuant to Sub-Clause 9.1 and shall be communicated in writing to all purchasers of the bidding documents. Prospective bidders shall promptly acknowledge receipt of each Addendum in writing to the Employer.
- 11.3 To give prospective bidders reasonable time in which to take an Addendum into account in preparing their bids, the Employer shall extend as necessary the deadline for submission of bids, in accordance with Clause 22.

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C. PREPARATION OF BIDS

- 12. Language of Bid** 12.1 The bid, and all correspondence and documents related to the bid exchanged by the bidder and the Employer, shall be written in the bid language stipulated in the Bidding Data and Conditions of Particular Application. Supporting documents and printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in the above stated language, in which case, for purposes of interpretation of the bid, the translation shall prevail.
- 13. Documents Comprising the Bid** 13.1 The bid submitted by the bidder shall comprise the following:
- (a) the Technical Proposal which contains the following parts in the following order:
 - (i) Part I - the information required by Clause 13.2;
 - (ii) Part II - the Bid Security;
 - (iii) Part III - where applicable, the joint venture documents required by Clause 13.3;
 - (iv) Part IV - a written power of attorney demonstrating the authority of the person or persons signing the Proposal to bind the Bidder;
 - (v) Part V - optional, separately bound pre-printed literature; and
 - (b) the Financial Proposal which consists of
 - (i) the duly filled-in Form of Bid;
 - (ii) the Appendix to Bid; and
 - (iii) the priced Bill of Quantities
- 13.2 Part I of the Technical Proposal shall consist of the following sub-parts in the following order:
- (i) a detailed "Methodology" setting out the manner in which the Bidder proposes to carry out the Services;
 - (ii) a detailed work plan and time schedule for all Services;
 - (iii) a detailed description of potential problems with pressure management in low pressure situations and possible solutions;
 - (iv) a detailed description of DMA data logging, data transfer and data management
 - (v) a concept for transfer of technology and training of the Employer's staff during the last year of the contract
 - (vi) supporting documentation and technical specifications

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of all materials and equipment specified in Part F of the Technical Specifications

- (vii) a detailed "Staffing Plan" setting out the Bidder's proposed staffing arrangements;
- (viii) a description of how the Bidder will work its local contractor(s)
- (ix) a table entitled "Summary of Staff Qualification" setting out all proposed positions for Key Staff and the qualifications, years of experience and areas of expertise for each of the proposed positions;
- (x) a section entitled "Curriculum Vitae" which contains the signed curriculum vitae for each of the Key Staff; and
- (xi) optional: any other information that may be required

13.3 Each Joint Venture Bidder shall submit, as Part III of the Technical Proposal, a written commitment, in the form of a letter duly executed by an authorized officer of each joint venture participant, which,

- (a) confirms each joint venture participant's commitment to the joint venture and acceptance of the joint venture arrangements described in the Proposal;
- (b) confirms each joint venture participant's willingness to provide a joint and several guarantee to the Client to underwrite the performance of the joint venture in respect of the Contract; and
- (c) identifies which joint venture participant,
 - (i) will assume the leading role on behalf of the other joint venture participants; and
 - (ii) will have the authority to commit all joint venture participants

13.4 If so indicated in the Bidding Data, bidders bidding for this contract, together with other contracts to form a package, will so indicate in the bid, together with any discounts offered for the award of more than one contract.

14. Bid Prices

14.1 Leakage Reduction and Management Services, as described in Sub-Clause 1.1 (b), shall be based on a Fixed and Performance Fee. DMA Establishment works are paid by a unit rate per DMA and required pipe installation works per m of pipeline supplied and installed as per the unit rates in the BoQ. Other works, such as possible System Expansion Works and Emergency and Unforeseen Works are paid in accordance with the unit rates of the Bill of Quantities.

- (a) a maximum ratio between the fixed and performance fee is applicable if so indicated in the Bidding Data; and
- (b) a maximum ratio between the leakage reduction and management

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services and all other schedules of the BoQ is applicable if so indicated in the Bidding Data.

- 14.2 The leakage reduction volume (m³/d), quoted in the BoQ and in the Bidding Data, for the performance fee is based on the estimates stated in the Bid Data. It is neither a contractual target nor a minimum or maximum amount - it is simply a **fixed** estimate that is used to compute the total contract price to be used for bid evaluation. The Contractor has to use his own experience and judgment to analyze the likeliness of over- or under-achieving this figure when doing his calculations of the performance fee per m³/d leakage reduction.
- 14.3 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the bidder.
- 14.4 Except if the Bidding Data defines the contrary, the prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. The bidder shall furnish the indices and weightings for the price adjustment formulae in the Appendix to Bid, and shall submit with its bid such other supporting information as required under the Conditions of Contract. The Employer may require the bidder to justify its proposed weightings.
- 15. Currencies of Bid and Payment**
- Alternative A:
Bidders quote
entirely in local
currency**
- 15.1 The currency(ies) of the bid shall follow Alternative A or B, as specified in the **Bidding Data**.
- 15.2 The unit rates and the prices shall be quoted by the bidder entirely in the currency of the Employer's country specified in the **Bidding Data** and Conditions of Particular Application. A bidder expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country (referred to as "the foreign currency requirements") shall indicate in the Appendix to Bid the percentage(s) of the Bid Price (excluding Contingencies) needed by him for the payment of such foreign currency requirements, limited to no more than three foreign currencies of any member country of the Bank.
- 15.3 The rates of exchange to be used by the bidder in arriving at the local currency equivalent and the percentage(s) mentioned in Sub-Clause 15.2 above shall be specified by the bidder in the Appendix to Bid, and shall apply for all payments under the Contract so that no exchange risk will be borne by the successful bidder.
- 15.4 Bidders shall indicate their expected foreign currency requirements in the Appendix to Bid.
- 15.5 Bidders may be required by the Employer to clarify their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Appendix to Bid are reasonable and responsive to Sub-Clause 15.2, in which case a detailed breakdown of its foreign currency requirements shall be provided by the bidder.

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- Alternative B:
Bidders quote in
local and foreign
currencies**
- 15.2 The unit rates and prices shall be quoted by the bidder separately in the following currencies:
- (a) for those inputs to the Works that the bidder expects to supply from within the Employer's country, in the currency of Employer's country specified in the **Bidding Data** and Conditions of Particular Application; and
 - (b) for those inputs to the Works that the bidder expects to supply from outside the Employer's country (referred to as "the foreign currency requirements") in up to any three currencies of any member country of the Bank.
- 15.3 Bidders shall indicate their expected foreign currency requirements in the Appendix to Bid.
- 15.4 Bidders may be required by the Employer to clarify their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Appendix to Bid are reasonable and responsive to Sub-Clause 15.2, in which case a detailed breakdown of its foreign currency requirements shall be provided by the bidder.
- 15.5 During the progress of the Works, the foreign currency portions of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Sub-Clause 72.4 of the Conditions of Particular Application. Any such adjustment shall be effected by comparing the amounts quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.
- 16. Bid Validity**
- 16.1 Bids shall remain valid for the period stipulated in the Bidding Data after the deadline for bid submission as specified in Clause 22.
- 16.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting its bid security. A bidder agreeing to the request will not be required or permitted to modify its bid, but will be required to extend the validity of its bid security for the period of the extension and in compliance with Clause 17 in all respects.
- 17. Bid Security**
- 17.1 If required in the **Bidding Data**, the bidder shall furnish, as part of its bid, a Bid Securing Declaration or a bid security in the amount stipulated in the **Bidding Data** in the currency of the Employer's country, or the equivalent amount in a freely convertible currency.
- 17.2 If required the bid security shall:
- (a) at the bidder's option, be in the form of either a letter of credit, or a bank guarantee from a banking institution, or a bond issued by an

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- insurance or bonding institution;
- (b) be issued by a reputable institution selected by the bidder and located in any eligible country; If the institution issuing the bond is located outside the Employer's Country, it shall have a correspondent financial institution located in the Employer's country to make it enforceable.
 - (c) be substantially in accordance with one of the forms of bid security included in Section VII or other form approved by the Employer prior to bid submission;
 - (d) be payable promptly upon written demand by the employer in case any of the conditions listed in Sub-Clause 17.7 are invoked;
 - (e) be submitted in its original form; copies will not be accepted;
 - (f) remain valid for a period of 28 days beyond the original validity period of bids, or beyond any period of extension subsequently requested under Sub-Clause 16.2.
- 17.3 The bid security of a joint venture shall be issued so as to commit fully all partners to the proposed joint venture.
- 17.4 Any bid not accompanied by an acceptable bid security shall be rejected by the Employer as nonresponsive.
- 17.5 The bid securities of unsuccessful bidders will be returned as promptly as possible, but not later than 28 days after the expiration of the original period, or any subsequently extended period, of bid validity.
- 17.6 The bid security of the successful bidder will be returned when the bidder has signed the Agreement and furnished the required performance security.
- 17.7 The bid security may be forfeited
- (a) if the bidder withdraws its bid, except as provided in Sub-Clause 24.2; or
 - (b) in the case of a successful bidder, if he fails within the specified time limit to
 - (i) sign the Agreement, or
 - (ii) furnish the required performance security.
- 18. Alternative Proposals by Bidders** 18.1 Bidders shall prepare their bids in accordance with the bidding document. Alternative proposals shall not be considered during bid evaluation, except if so indicated in the Bidding Data.
- 19. Pre-Bid Meeting** 19.1 The bidder's designated representative is invited to attend a pre-bid meeting, which will take place at the venue and time stipulated in the Bidding Data, but in any case at least 28 days before the bid submission

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date.

19.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

19.3 The bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer not later than one week before the meeting. It may not be practicable at the meeting to answer questions received late, but questions and responses will be transmitted in accordance with the following sub-clause.

19.4 Minutes of the meeting, including the text of the questions raised and the responses given, together with any responses prepared after the meeting, will be transmitted without delay to all purchasers of the bidding documents. Any modification of the bidding documents listed in Sub-Clause 9.1 that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 11 and not through the minutes of the pre-bid meeting.

19.5 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

20. Format and Signing of Bid

20.1 The bidder shall prepare one original of the documents comprising the bid as described in Clause 13 of these Instructions to Bidders clearly marked "original." In addition, the bidder shall submit copies of the bid, in the number specified in the Bidding Data and clearly marked "copies." In the event of discrepancy between them, the original shall prevail.

20.2 The original of the bid shall be computer printed, typed or written in indelible ink and shall be signed and initialed by a person or persons duly authorized to sign on behalf of the bidder, pursuant to Paragraphs 5.1 (a) or 5.2 (c), as the case may be except for un-amended printed literature.

20.3 The bid shall contain no alterations, omissions, or additions, unless such corrections are initialed by the person or persons signing the bid.

20.4 The bidder shall furnish information as described in paragraph 7 of the Form of Bid on commissions or gratuities, if any, paid or to be paid to agents relating to this Bid, and to contract execution if the bidder is awarded the Contract.

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D. SUBMISSION OF BIDS

21. Sealing and Marking of Bids

21.1 The Bidder shall:

- (a) seal the original of the Technical Proposal in an envelope or package labeled, "Technical Proposal – Original" (the "Technical Proposal Envelope") and indicate the name and address of the bidder
- (b) seal the original of the Financial Proposal in an envelope labeled with the name of the Bidder and the words, "Financial Proposal – Original" (the "Financial Proposal Envelope") and indicate the name and address of the bidder
- (c) place the sealed Technical Proposal Envelope and the sealed Financial Proposal Envelope in a third envelope or package (the "Outer Envelope") as cross-referenced to 21.3.

21.2 The Bidder shall:

- (a) seal the copies of the Technical Proposal in an envelope or package labeled, "Technical Proposal – Copy" (the "Technical Proposal Copy") and indicate the name and address of the bidder
- (b) seal the copies of the Financial Proposal in an envelope labeled with the name of the Bidder and the words, "Financial Proposal – Copy" (the "Financial Proposal Copy") and indicate the name and address of the bidder
- (c) with respect to each copy of the Proposal, place one sealed envelope or package containing one of the copies of the Technical Section and one sealed envelope containing one of the copies of the Financial Section in an outer envelope or package labeled, "Copy # _____ – Proposal Documents – name and identification number of the Contract as defined in the Bidding Data", with each copy given its own specific number from one to the number specified in the Bidding Data.

21.3 All outer envelopes mentioned above must be

- (a) be addressed to the Employer at the address provided in the Bidding Data;
- (b) bear the name and identification number of the Contract as defined in the Bidding Data; and
- (c) provide a warning not to open before the time and date for bid

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opening as defined in Clause 25.1.

If any of the outer envelopes is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the bid. If the outer envelopes disclose the bidder's identity, the Employer will not guarantee the anonymity of the bid submission, but this shall not constitute grounds for rejection of the bid.

- 22. Deadline for Submission of Bids**
- 22.1 Bids must be received by the Employer at the address specified in Sub-Clause 21.2 no later than the time and date stipulated in the Bidding Data. When so specified in the Bidding Data, bidders shall have the option of submitting their bids electronically. Bidders submitting bids electronically shall follow the electronic bid submission procedures specified in the Bidding Data.
- 22.2 The Employer may, in exceptional circumstances and at its discretion, extend the deadline for submission of bids by issuing an Addendum in accordance with Clause 11, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.
- 23. Late Bids**
- 23.1 Any bid received by the Employer after the deadline for submission of bids prescribed in Clause 22 will be returned unopened to the bidder.
- 24. Modification and Withdrawal of Bids**
- 24.1 The bidder may modify or withdraw its bid after bid submission, provided that written notice of the modification or withdrawal is received by the Employer prior to the deadline for submission of bids.
- 24.2 The bidder's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with the provisions of Clause 21, with the outer and inner envelopes additionally marked "modification" or "withdrawal," as appropriate.
- 24.3 No bid may be modified by the bidder after the deadline for submission of bids.
- 24.4 Withdrawal of a bid during the interval between the deadline for submission of bids and expiration of the period of bid validity specified in Clause 16 may result in the forfeiture of the bid security pursuant to Sub-Clause 17.6.

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E. BID OPENING AND EVALUATION

25. Bid Opening - Technical Proposals

- 25.1 The Employer will open the Technical Proposals Envelopes, including withdrawals and modifications made pursuant to Clause 24, in the presence of bidders' designated representatives who choose to attend, at the time, date, and location stipulated in the Bidding Data. The bidders' representatives who are present shall sign a register evidencing their attendance.
- 25.2 Envelopes marked "WITHDRAWAL" shall be opened first, and the name of the bidder shall be read out. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 24 shall not be opened. Subsequently, all Technical Proposal Envelopes marked "MODIFICATION" shall be opened and the submissions therein read out in appropriate detail.
- 25.3 The Employer shall announce the Bidders' names at the opening of the Technical Proposal Envelopes as well as whether the Bid Security is contained in the Bidder's Technical Proposal. The Financial Proposal Envelopes of all Proposals shall remain sealed until all Financial Section Envelopes are opened in accordance with Clause 26. No bid shall be rejected at bid opening except for late bids pursuant to Clause 23.
- 25.4 The Employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with Sub-Clause 25.3.
- 25.5 Bids not opened and read out at bid opening shall not be considered further for evaluation, irrespective of the circumstances.

26. Bid Opening - Financial Proposals

- 26.1 The Employer shall determine a date and time after the evaluation of the Technical Sections when the Employer shall open the Financial Section Envelopes of the Substantially Responsive Bidders and shall,
- notify the Bidders of the date and time of the opening of the Financial Proposal Envelopes;
 - carry out the opening of the Financial Proposal Envelopes, including any modifications thereof, of the Qualified Bidders and the announcement of the Qualified Bidders' names and quoted prices in the presence of the Bidder's representatives who choose to attend the opening; and
 - return the unopened Financial Proposal Envelopes, including any modifications thereof, of the Bidders who failed to comply with the technical requirements.
- 26.2 Bidders' representatives who attend the opening of the Financial Proposal Envelopes shall sign a register to record their attendance.
- 26.3 The Employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with Sub-Clause

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- 26.1 (b).
- 27. Process to Be Confidential**
- 27.1 Information relating to the examination, clarification, evaluation, and comparison of bids, and recommendations for the award of a contract, shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful bidder has been announced. Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of the bidder's bid.
- 28. Clarification of Bids and Contacting the Employer**
- 28.1 To assist in the examination, evaluation, and comparison of bids, the Employer may, at its discretion, ask any bidder for clarification of its bid. The request for clarification and the response shall be in writing, but no change in the price or substance of the bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause 30.
- 28.2 From the time of bid opening to the time of Contract award, if any bidder wishes to contact the Employer on any matter related to the bid, it should do so in writing.
- 28.3 Any effort by the bidder to influence the Employer in the Employer's bid evaluation, bid comparison, or Contract award decisions may result in the rejection of the bidder's bid.
- 29. Evaluation of Technical Proposals**
- 29.1 The Employer will evaluate the Technical Proposals received prior to the Submission Deadline and opened in accordance with Clause 25 in accordance with the following process:
- (a) prior to the detailed evaluation of bids, the Employer will determine whether each Technical Proposal (a) meets the eligibility criteria of the Bank; (b) has been properly signed; (c) is accompanied by the required securities;
 - (b) the Employer will examine each Technical Proposal submitted to determine whether the Technical Proposal is complete and Substantially Responsive to the Bidding Documents;
 - (c) the Employer will evaluate the Technical Proposals based on the evaluation criteria provided in the Bidding Data. The use of other criteria shall not be permitted. The Employer reserves the right to waive minor deviations in the evaluation criteria if they do not materially effect the successful implementation of the contract. The technical proposals that have met the evaluation criteria will be considered as Substantially Responsive Bidders.
- 29.2 A substantially responsive bid is one that conforms to all the terms, conditions, and specifications of the bidding documents without material deviation or reservation. A material deviation or reservation is one (a) that affects in any substantial way the scope, quality, or performance of the Works and Services; (b) that limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the bidder's obligations under the contract; or (c) whose rectification would

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affect unfairly the competitive position of other bidders presenting substantially responsive bids.

29.3 If a bid is not substantially responsive, it will not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation and will not be considered for evaluation further.

29.4 Only technical proposals that pass all evaluation criteria shall be determined as “substantially responsive bids” and be considered for financial evaluation.

29.5 Technical Proposals failing to meet the evaluation criteria shall not be considered further in the evaluation process and their financial proposals shall be returned unopened.

30. Correction of Errors

30.1 The Employer shall open the Financial Proposals of the Substantially Responsive Bidders in accordance with Clause 26. The Employer shall examine each such Financial Proposal to determine whether it is complete and responsive to the Bidding Documents.

30.2 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern and the unit rate will be corrected.

30.3 The amount stated in the bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, its bid will be rejected, and the bid security may be forfeited in accordance with Paragraph 17.7 (b).

31. Conversion to Single Currency for Comparison of Bids

Option 1: To be used with Clause 15, Alternative A

31.1 For comparison of bids, the Bid Price, corrected pursuant to Clause 30, shall first be broken down into the respective amounts payable in various currencies by using the exchange rates specified by the bidder in accordance with Sub-Clause 15.3.

31.2 In the second step, the Employer will convert the amounts in various currencies in which the Bid Price is payable (excluding Contingencies but including Daywork where priced competitively) to either:

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- (a) the currency of the Employer's country at the selling rates established for similar transactions by the authority specified in the **Bidding Data** on the date stipulated in the **Bidding Data**;

or

- (b) a currency widely used in international trade, such as the U.S. dollar, stipulated in the **Bidding Data**, at the selling rate of exchange published in the international press as stipulated in the **Bidding Data** on the date stipulated in the **Bidding Data**, for the amounts payable in foreign currency; and, at the selling exchange rate established for similar transactions by the same authority specified in Paragraph 31.2 (a) above on the date specified in the **Bidding Data** for the amount payable in the currency of the Employer's country.

Option 2: To be used with Clause 15, Alternative B

- 31.1 The Employer will convert the amounts in various currencies in which the Bid Price, corrected pursuant to Clause 29, is payable (excluding Provisional Sums but including Daywork where priced competitively) to either:

- (a) the currency of the Employer's country at the selling rates established for similar transactions by the authority specified in the **Bidding Data** on the date stipulated in the **Bidding Data**;

or

- (b) a currency widely used in international trade, such as the U.S. dollar, stipulated in the **Bidding Data**, at the selling rate of exchange published in the international press as stipulated in the **Bidding Data** on the date stipulated in the **Bidding Data**, for the amounts payable in foreign currency; and, at the selling exchange rate established for similar transactions by the same authority specified in Paragraph 31.1 (a) above on the date specified in the **Bidding Data** for the amount payable in the currency of the Employer's country.

32. Evaluation and Comparison of Bids

- 32.1 The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 30.1.

- 32.2 In evaluating the bids, the Employer will adjust the Bid Price of each bid as follows:

- (a) making any correction for errors pursuant to Clause 30;
- (b) converting the amount resulting from applying (a) above and (c) below, if relevant, to a single currency in accordance with Clause 31;
- (c) applying any discounts offered by the bidder for the award of more than one contract, if bidding for this Contract is being done concurrently with other Contracts (sub-clause 13.4).

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- 32.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
- 32.4 Provisional sums and contingencies shall be excluded in evaluation and comparison of bids.
- 32.5 If the bid, which results in the lowest Evaluated Bid Price, is seriously unbalanced the Employer may require the bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security set forth in Clause 37 be increased at the expense of the bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the Contract
- 32.6 After application of the established in Sub-Clauses 32.1 to 32.4, the Evaluated Bid Price for comparison of bids will be :
- (a) the total price of the priced Bill of Quantities for DMA Establishment Works offered by the Bidder; plus
 - (b) the total price of the fixed and performance fee for the Leakage Reduction and Management Services offered by the Bidder; plus
 - (c) the total price of the priced Bill of Quantities for System Expansion Works offered by the Bidder, plus
 - (d) the total price of the priced Bill of Quantities for Emergency and Unforeseen Works offered by the Bidder.
- 33. Preference for Domestic Bidders**
- 33.1 If so indicated in the **Bidding Data**, domestic bidders may receive a margin of preference in bid evaluation for which this clause shall apply.
- 33.2 Domestic bidders shall provide all evidence necessary to establish that they meet the following criteria to be eligible for a 7½ percent margin of preference in the comparison of their bids with those of bidders who do not qualify for the preference.
- 33.3 A domestic bidder is one that meets the following criteria:
- (a) for an individual firm:
 - (i) is registered in the country of the Borrower;
 - (ii) has more than 50 percent ownership by nationals of the country of the Borrower;
 - (iii) does not subcontract more than 10 percent of the Contract Price, excluding Contingencies, to foreign contractors.

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- (b) for a joint venture (JV) of domestic firms:
 - (i) individual member firms shall satisfy Sub-Paragraphs 33.3 (a) (i) and (a) (ii) above;
 - (ii) the JV shall be registered in the country of the Borrower;
 - (iii) the JV shall not subcontract more than 10 percent of the Contract Price, excluding Contingencies, to foreign firms.

33.4 The following procedure will be used to apply the margin of preference:

- (a) After bids have been converted to a single currency in accordance with the provisions of Paragraphs 32.2 (b) above, responsive bids will be classified into the following groups:
 - (i) Group A: bids offered by domestic bidders and joint ventures meeting the criteria set out in the above Sub-Clause 33.3; and
 - (ii) Group B: all other bids.
- (b) For the purpose of further evaluation and comparison of bids only, an amount equal to 7½ percent of the evaluated Bid Price determined in accordance with the provisions of Paragraphs 32.2 (a), (b), and, where applicable, (c), will be added to all bids classified in Group B.

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F. AWARD OF CONTRACT

- 34. Award**
- 34.1 Subject to Clause 35, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest Evaluated Bid Price pursuant to Clause 31 and 32, provided that such bidder has been determined to be (a) eligible in accordance with the provisions of Sub-Clause 3.1; and (b) qualified in accordance with the provisions of Clause 5.
- 34.2 If, pursuant to Sub-Clause 13.4, this Contract is being let on a “slice and package” basis, the lowest evaluated Bid Price will be determined when evaluating this Contract in conjunction with other contracts to be awarded concurrently, taking into account any discounts offered by the bidders for the award of more than one contract, and the number of contracts for which the bidder has been pre-qualified.
- 35. Employer’s Right to Accept Any Bid and to Reject Any or All Bids**
- 35.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the Employer’s action.
- 36. Notification of Award**
- 36.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder in writing that its bid has been accepted. This letter (hereinafter and in the Conditions of Contract called the “Letter of Acceptance”) shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Works and the remedying of any defects therein by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called “the Contract Price”).
- 36.2 The notification of award will constitute the formation of the Contract.
- 36.3 Upon the successful bidder’s furnishing of the performance security pursuant to ITB Clause 38, the Employer will promptly notify the name of the winning bidder to each unsuccessful bidder and will discharge the bid security of the unsuccessful bidders, pursuant to ITB Clause 17.
- 36.4 The Employer shall publish in *UNDB online* and in the *dgMarket* the results identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at Financial Proposal Opening; (iii) name and evaluated prices of each Bid that was evaluated; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded. If, after notification of award, a unsuccessful bidder wishes to ascertain the grounds on which its bid was not selected, it should address its request to the Employer. The Employer will promptly respond in writing to the

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unsuccessful bidder.

37. Signing of Agreement

- 37.1 At the same time that the Employer notifies the successful bidder that its bid has been accepted, the Employer will send the bidder the Agreement in the form provided in the bidding documents, incorporating all agreements between the parties.
- 37.2 Within 28 days of receipt of the Agreement, the successful bidder shall sign the Agreement and return it to the Employer, together with the required performance security.
- 37.3 Upon fulfillment of Sub-Clause 36.2, the Employer will promptly notify the other bidders that their bids have been unsuccessful and their bid security will be returned as promptly as possible, in accordance with Sub-Clause 17.5.

38. Performance Security

- 38.1 Within 28 days of receipt of the Letter of Acceptance from the Employer, the successful bidder shall furnish to the Employer a performance security in the form stipulated in the Bidding Data and the Conditions of Contract. The form of performance security provided in Section XI of the bidding documents may be used or some other form acceptable to the Employer. In the case of joint ventures, the Performance Security should be issued in the name of the joint venture.
- 38.2 If it is stipulated in the Bidding Data that the performance security is to be provided by the successful bidder in the form of a bank guarantee, it shall be issued either (a) at the bidder's option, by a bank located in the country of the Employer or by a foreign bank through a correspondent bank located in the country of the Employer, or (b) with the prior agreement of the Employer directly by a foreign bank acceptable to the Employer.
- 38.3 If it is stipulated in the Bidding Data that the performance security may also be provided by the successful bidder in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful bidder to be acceptable to the Employer.
- 38.4 Failure of the successful bidder to comply with the requirements of Clauses 37 or 38 shall constitute a breach of Contract, cause for annulment of the award, forfeiture of the bid security, and any such other remedy the Employer may take under the Contract, and the Employer may resort to awarding the Contract to the next ranked bidder.

39. Disputes Review Method

- 39.1 The disputes review method (i.e., the Disputes Review Board or the Disputes Review Expert) is indicated in the Bidding Data. The Employer and the successful bidder will select Disputes Review Board members or the Disputes Review Expert, as the case may be, according to the procedure set forth in the Conditions of Contract.

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40. Fraud and Corruption

40.1 The Bank requires that Borrowers (including beneficiaries of Bank loans), as well as bidders/suppliers/contractors under Bank-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Bank:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and
 - (ii) “fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;
 - (iii) “collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Borrower, designed to establish bid prices at artificial, **noncompetitive levels; and**
 - (iv) “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract;
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question;
- (c) will cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of the loan engaged in corrupt, fraudulent, collusive or coercive practices during the procurement or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to the Bank to remedy the situation;
- (d) will sanction a firm or individual, including declaring them ineligible, either indefinitely or for a stated period of time, to be awarded a Bank-financed contract if it at any time determines that they have, directly or through an agent, engaged, in corrupt, fraudulent, collusive or coercive practices in competing for, or in executing, a Bank-financed contract; and
- (e) will have the right to require that a provision be included in Bidding Documents and in contracts financed by a Bank Loan,

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requiring bidders, suppliers, contractors and consultants to permit the Bank to inspect their accounts and records and other documents relating to the Bid submission and contract performance and to have them audited by auditors appointed by the Bank.

- 40.2 Furthermore, bidders shall be aware of the provision stated in Sub-Clause 26.2 and Sub-Clause 63.5 of the General Conditions of Contract, Part II—Conditions of Particular Application.

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Section III. Bidding Data

Instructions to Bidders Clause Reference

Whenever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

[1.1]	<p>Employer: The Employer is:</p> <p style="text-align: center;">CLIENT, COUNTRY</p> <p>Summary of the Services to be provided:</p> <p>The contract includes the Performance-Based Reduction and Management of physical losses (leakage) in the contract area as well as the initial establishment of DMAs and system expansion and emergency works.</p>
[1.1(a)]	<p>DMA Establishment Works are required under the contract:</p> <p>The scope of work per DMA includes: (i) detailed site investigation and updating of the distribution network drawing; (ii) verification of suggested DMA boundaries; (iii) detailed DMA design, including: connecting mains to be laid, boundaries valves, DMA inflow chamber, pressure reducing valve arrangement and specifications just to mention the most important activities; detailed design shall be submitted to the Project Manager for approval; (iv) execution of all required civil and installation works, complete with the supply of all required pipes, materials, fittings and equipment as per the specifications; (v) installation of pressure and flow data logger, setting up of data transfer to Contractor's office and Client's office (GSM data transfer); (vi) execution of zero-pressure-test; and (vii) preparation of as-built drawings. These services will be offered with unit prices for the activities included in the Bill of Quantities. For bid evaluation the volumes estimated in the Bill of Quantities will be used, however, billing will be based on the actual number of DMAs established and works carried out.</p>
[1.1(b)]	<p>Leakage Reduction and Management Service:</p> <p>In all DMAs that have been established under the Contract, the Contractor has to take all necessary action, provide all required services and materials and carry out all works required to achieve the objective of the contract and reduce leakage in the contract area.</p> <p>The following (non-exhaustive) list summarizes the activities the Contractor is normally expected to carry out: (i) baseline 7-day inflow and pressure measurement prior to starting any activities; (ii) leak detection surveys (using all kind of equipment and technologies); pressure management: stabilizing, managing and reducing average DMA pressure using PRVs and controllers and various techniques as appropriate; (iii) leak repair: repair of leaks on mains and replacement of leaking service connections; (iv) detection of illegal connections; (v) quarterly leakage modeling, (vi) continuous monitoring of DMA inflow, pressure and minimum night flow and execution of leak detection and repair should the tolerance limits be exceeded (see Part C.5 of the Technical Specifications), (vii) execution of the final inflow and pressure measurement. These Services will be offered and remunerated by (i) a Quarterly Fixed-fee, (ii) a Performance fee per volume of leakage reduction and (iii) a fee per detected illegal connection. These are all-inclusive payments for the leakage reduction and management services as per the Specifications. Combined these three items cover all fixed cost, overheads, profit and all manpower, machinery, equipment, transport as well as all materials and works required to carry out all activities that might become necessary to achieve the objective of the contract.</p>

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[1.1(c)]	<p>System Expansion Works are required under the Contract and must be quoted in accordance with the BoQ:</p> <p>System Expansion Works include the installation of service connections to new customers inside the DMA. In some cases this might also require the extension of a distribution main inside the DMA so that new customers can be connected in the most effective way. These services will be offered with unit prices for the activities included in the Bill of Quantities. For bid evaluation the volumes estimated in the Bill of Quantities will be used, however, billing will be based on the actual works performed.</p>
[1.1(d)]	<p>Emergency and Unforeseen Works are required under the Contract and must be quoted in accordance with the BoQ</p> <p>These would typically include a) leak repairs on trunk mains and distribution mains close to but outside of the DMAs included in this contract and b) replacement of mains (and associated service pipes) within DMAs with high burst frequency where frequent leak repairs are not sufficient to achieve sustainable leakage reduction in the DMA. These services will be offered with unit prices for the activities included in the Bill of Quantities, including a daywork schedule. For bid evaluation the volumes estimated in the Bill of Quantities will be used, however, billing will be based on the actual works performed. Replacement of mains (and associated service pipes) within DMAs will be on an exception basis and subject to approval by the Project Manager.</p>
[1.2]	<p>Period during which Works and Maintenance Services are to be provided:</p> <p>Leakage Reduction Period consisting of 1.1(a), 1.1(b), 1.1(c) and 1.1(d): 48 months</p> <p>Maintenance Period: 12 months after completion of the leakage reduction phase</p>
[2.1]	<p>Name of the Borrower: Socialist Republic of Viet Nam</p>
[2.1]	<p>The CLIENT Non-Revenue Water Management Project is a Sub-Project of the VUWSDP. The investment objectives of the CLIENT Sub-Project comprise the following:</p> <ol style="list-style-type: none"> (1) Network Zoning and Restructuring to establish water supply zones and district metered areas (DMAs), in order to monitor and control NRW, network flow and pressure. (2) NRW Reduction to reduce both real water losses (physical leakages) and apparent water losses (commercial losses), with a greater priority for reduction of real water losses by improving system maintenance and rehabilitation, active leakage control, speed and quality of leak repairs, and pressure management, in order to increase water supply capacity. (3) Improvement of CLIENT Water Distribution Management Capability to build capacity by training, technology transfer and incentive schemes of NRW Management Departments, in order to improve financial efficiency of CLIENT and subsidiary companies.

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Bidding Data

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	<p>[The Development Credit Agreement signed on [] with regard to the Credit No. [] between COUNTRY and International Development Association (IDA). The IDA agrees to lend to COUNTRY a credit amount of [AMOUNT AND CURRENCY) towards the cost of the Urban Water Supply Development Project (UWSDP).]</p> <p>[The On-lending Agreement signed on [] between Ministry of Finance on behalf of COUNTRY and CLIENT with regard to the utilization of the Credit No.[] of the International Development Association (IDA). The Ministry of Finance agrees to lend to CLIENT a credit amount equivalent to [AMOUNT AND CURRENCY]]</p>
[5.1]	None
[8.2]	<p>Venue, time, and date of the official site visit.</p> <p>Date: _____ <i>(the same day of the pre-bid meeting)</i></p> <p>Meeting point: (CLIENT) Address: CLIENT, COUNTRY</p> <p>Time: [] local COUNTRY time</p>
[8.3]	<p>Information on the Data room</p> <p>Location: (CLIENT) Address: CLIENT, COUNTRY</p> <p>Opening Days: working days (Monday to Friday) from the day of issuance of bidding documents to the day before deadline for submission of the bids.</p> <p>Opening time: [] local COUNTRY time</p>
[10.1]	<p>Bidders should address any request for clarifications to:</p> <p style="text-align: center;">CLIENT COUNTRY</p>
[12.1]	<p>Bid language.</p> <p><i>English</i></p>
[13.4]	Not applicable.

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[14.1(a)]	<p>The Fixed-fee must not exceed 30% of the Performance Fee. The following example (figures are examples only) shows the principle:</p> <ul style="list-style-type: none"> (i) Indicative leakage reduction volume as per the BoQ: 75,000 m3/d (ii) Performance Fee quoted by the bidder: 80 XY currency (iii) Total amount of Performance Fee used for bid evaluation: $75,000 \times 80 = 6,000,000$ XY currency (iv) Maximum allowable fixed fee: $30\% \text{ of } 6,000,000 = 1,800,000$ XY (v) Maximum quarterly fixed-fee: $1,800,000 / 5 \text{ (years)} / 4 \text{ (quarters)} = 90,000$ XY (vi) The Contractor is of course free to quote a much lower fixed fee and increase the rate for the performance fee instead.
[14.1(b)]	<p>The BoQ consists of 6 Schedules:</p> <ul style="list-style-type: none"> 1 General Requirements 2 DMA Establishment 3 Leakage Reduction and Management Services 4 System Expansion Works 5 Emergency and Unforeseen Works 6 Daywork Schedule <p>The total amount of Schedules 1, 2, 4, 5 and 6 must not exceed the amount Schedule 3 (Leakage Reduction and Management Services).</p> <p>A specified provisional sum equal to [CURRENCY AND AMOUNT] shall be inserted on the Schedule 1 – General Requirements of BoQ to cover the expenses towards the factory inspections by the Project Manager and the Employer's representatives. This specified provisional sum shall be expended in whole or in part upon specific advance approval of the Employer.</p>
[14.2]	<p>The leakage reduction volume used in the BoQ is [75,000] m3/d. It was derived from (i) the approximate number of service connections in the contract area [], (ii) a system-wide average leakage figure of [] liters per connection per day per meter pressure, the average pressure [] meters and an assumed leakage reduction efficiency of []%.</p> <p>Note: Leakage levels in some or all of the DMAs might vary substantially from the CLIENT system-wide average figure used for the estimate.</p>
[14.3]	Price adjustment clauses will apply.
[15.1]	Currency(ies) of the bid are in accordance with Alternative B of Clause 15.
[15.2]	Currency of the Employer's country: []

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[16.1]	Period of bid validity: [182] days
[17.1]	Amount of bid security. [AMOUNT AND CURRENCY]
[18.1]	Alternative Bids are not admitted.
[19.1]	Venue, time, and date of the site visit and pre-bid meeting. Date: _____ (3 weeks after issuance of bidding documents) Meeting point: (CLIENT) CLIENT, COUNTRY Time: Site visit: [time] local COUNTRY time Pre-bid meeting: [TIME] local COUNTRY time
[20.1]	Number of copies of the bid to be completed and returned: Two.
[21.3]	The address for submission of bids is: CLIENT, COUNTRY Attention: Project Manager
[21.3]	The Number of the Contract is: []
[22.1]	Deadline for submission of bid is: [] local COUNTRY time on _____ [12 weeks after issuance of bidding documents] Bidders shall not have the option of submitting their bids electronically.
[25.1]	Venue, time, and date of bid opening: (CLIENT) CLIENT, COUNTRY Time, and date of bid opening: [] local COUNTRY time on [DATE]
[29.1 (c)]	The following evaluation criteria shall be used in evaluation of technical proposals on a pass/fail basis. The technical proposals complying with each of the criteria shall be evaluated as “pass” and the technical proposals do not comply with any of the criteria shall be evaluated as “fail”. Responsive Bidders must substantially pass for all evaluation criteria. i) Methodology must be clear, provide sound solutions and demonstrate a comprehensive approach for the entire scope of services.

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Bidding Data

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	<ul style="list-style-type: none"> ii) Methodology must provide sufficient level of detail to demonstrate a good understanding of local conditions and possible implementation problems specific to CLIENT. iii) Methodology must include detailed information about the logistics for contract implementation (material management; location, size and numbers of offices and stores) iv) Methodology must include detailed problem analysis related to pressure management and provide applicable technical solutions including specifications for pressure reducing valves in compliance with Technical Specifications. v) DMA data management methodology must describe the technology to be used in data logging and data transfer and their applicability in COUNTRY and software to be used. vi) Work plan must be comprehensive and must include a detailed time schedule for each activity under the Services. vii) The concept of transfer of knowledge having innovative aspects and applicable to CLIENT and training arrangements for Employer's staff must be clearly provided including number and skills of staff to be trained and means of training. viii) The proposed materials and equipment must comply with the requirements and standards specified in the Technical Specifications. ix) The staffing plan must provide, at minimum, numbers, inputs, positions and responsible tasks of all staff. x) Key staff must be competent and experienced and must meet the minimum qualification requirements specified in the Technical Specifications.
--	---

[31]	<p>Currency chosen for the purpose of converting to a common currency:</p> <p>[]</p> <p>Source of exchange rate:</p> <p>[BANK]</p> <p>at:</p> <p>Exchange rate date: _____ <i>Insert same date as Submission Deadline</i></p>
[33.1]	<p>Indicate whether domestic contractors will receive a margin of preference in bid evaluation.</p>

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	No
[38.]	Standard form and amount of performance security acceptable to the Employer. Unconditional Bank Guarantee in the amount of []% of the Contract Value
[39.]	Disputes Review Method. DRB -- Disputes Review Board

SAMPLE

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General Conditions of Contract

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Section IV. General Conditions of Contract (GCC) for Performance-Based Leakage Reduction and Management

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A. CONTRACT AND INTERPRETATION

1. Definitions

1.1 Boldface type is used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Contractor's Bid.

BoQ is the abbreviation for Bill of Quantities.

The **Completion Date** is the date of completion of the Services and Works as certified by the Project Manager, in accordance with Sub-Clause 10.2.

The **Contract** is the Contract between the Employer and the Contractor to perform the services to be provided by the Contractor, and to execute, complete, and maintain the Works. It consists of the documents listed in Clause 3 below.

The **Contractor** is a person or corporate body whose Bid to carry out the Works and Services has been accepted by the Employer.

The **Contractor's Bid** is the completed bidding document submitted by the Contractor to the Employer.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days; **months** are calendar months.

A **Defect** is any part of the Works and Services not completed in accordance with the Contract.

The **Defects Liability Certificate** is the certificate issued by Project Manager upon correction of defects by the Contractor.

The **Defects Liability Period** is the period named in the Specific Conditions of Contract (SCC) and calculated from the Completion Date.

Dispute Review Board (DRB) is a board of three members selected and act in accordance with rules and procedures defined in the Contract to seek to resolve any dispute of any kind that may arise between the Employer and the Contractor in connection with or arising out of the Contract, as provided for in Clause 6 hereunder.

District Meter Area is a small (normally less than [3,000] service connections) hydraulically discreet part of the water distribution network, generally with one but sometimes with two or more inflow points equipped with bulk water meters.

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DMA is the abbreviation for District Meter Area.

DMA Establishment Works are specific and clearly defined civil works the Contractor is required to carry out early during the initial period of the contract under the conditions of the Contract, as defined in the Technical Specifications.

DMA Inflow Chamber means in this contact the chamber with all pipework, bypass, valves and other fittings, pressure reducing valve, magnetic flow meter, data logger and above ground box.

Drawings include calculations and other information provided by the Contractor for the execution of the Contract.

Emergency Works and Other Unforeseen works is a set of necessary and sufficient activities to carry out repairs on the distribution network beyond the normal scope of the leakage reduction activities. The need for execution of Emergency Works is jointly identified by the Employer and the Contractor and for starting of execution of Emergency Works the Employer shall issue a Work Order.

The **Employer** is the party who employs the Contractor to carry out the Works and Services.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works and to carry out the Services.

Illegal connection is a service connection to a water consumer that is not a registered customer of the Employer or an additional unmetered and therefore illegal connection to a registered customer, for example a hidden pipe bypassing the customer's meter.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works and Services. The Intended Completion Date is specified in the specific Conditions of Contract (SCC). The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time.

The **Leakage Management Office** is the location indicated by the Contractor from which the Leakage Manager operates, and where the Contractor shall receive notifications.

The **Leakage Manager** is a person appointed by the Contractor who is in charge of managing all activities of the Contractor under the Contract. He is also the Contractor's Representative for the purposes of this contract.

Leakage Reduction and Management Services means all interventions under the Contract which shall be carried out by the Contractor in order to achieve and keep the Leakage Performance Standards as defined in the

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Contract and to receive the respective payments.

The **Leakage Reduction Phase** is the initial [four (4)] year period of the contract during in which the Contractor has to substantially complete all works. The Leakage Reduction Phase is directly followed by the [12 months] Maintenance Phase.

Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works and for provision of Services.

The **Maintenance Period** is the last [NUMBER] months of the contract during which the leakage levels have to be maintained and the Contractor has to prepare for the final hand-over of the works and systems to the Employer.

Plant is any integral part of the Works and Services that shall have a mechanical, electrical, chemical, or biological function.

The **Project Manager** is the person named in the SCC who is responsible for the overall administration of the Contract on behalf of the Employer, the supervision of services to be performed hereunder, and the execution of Works included in the Contract. The Project Manager may delegate through a written instrument some of his functions to any other competent person, retaining however the overall responsibility for the actions of that person. The Project Manager may not delegate the overall administrative control of the Contract.

The **Site** is the area defined as such in the SCC.

The **Start Date** is given in the SCC. It is the latest date when the Contractor shall commence execution of the Works and Services. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a contractual agreement with the Contractor to carry out certain activities related to the services to be provided under the contract, which may include work on the Site.

System Expansion Works consists of a set of interventions that add new customer service connections in the contract area, as defined in the Technical Specifications.

Technical Specification means the Specification of the Works, Services and Materials included in the Contract and any modification or addition made or approved by the Project Manager.

A **Variation** is an instruction given by the Project Manager which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install,

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and turn over to the Employer, as covered under the Contract.

Work Order is an order issued by the Project Manager to the Contractor authorizing the execution of Emergency Works, as provided for in Clause 27 hereunder.

- 2. Interpretation** 2.1 In interpreting these General Conditions of Contract (GCC), singular also means plural, male also means female or neuter, and vice versa. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager will provide instructions clarifying queries about these General Conditions of Contract (GCC).
- 3. Documents Forming the Contract** 3.1 The documents forming the Contract shall be interpreted in the following order of priority:
- (1) Agreement,
 - (2) Letter of Acceptance,
 - (3) Contractor's Bid,
 - (4) Special Conditions of Contract (SCC),
 - (5) General Conditions of Contract (GCC),
 - (6) Technical Specifications,
 - (7) Drawings,
 - (8) Bill of Quantities, and
 - (9) any other document listed in the SCC as forming part of the Contract.
- 4. Language and Law** 4.1 The language of the Contract and the law governing the Contract are stated in the SCC.
- 5. Notices** 5.1 Unless otherwise stated in the Contract, all notices to be given under the Contract shall be in writing, and shall be sent by personal delivery, special courier, facsimile or email to the address of the relevant party set out in the SCC, with the following provisions:
- 5.1.1 Any notice sent by facsimile or e-mail shall be confirmed within two (2) days after dispatch by notice sent by special courier, except as otherwise specified in the Contract.
- 5.1.2 Any notice sent by special courier shall be deemed (in the absence of evidence of earlier receipt) to have been delivered ten (10) days after dispatch. In proving the fact of dispatch, it shall be sufficient to show that the envelope containing such notice was properly addressed, stamped and conveyed to the courier service for transmission by special courier.
- 5.1.3 Any notice delivered personally or sent by facsimile or e-mail shall be

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deemed to have been delivered on date of its dispatch.

5.1.4 Either party may change its postal, facsimile or e-mail address or addressee for receipt of such notices by ten (10) days' notice to the other party in writing.

5.2 Notices shall be deemed to include any approvals, consents, instructions, orders and certificates to be given under the Contract.

5.3 The Contractor shall provide at its own cost, and maintain in operation permanently during the duration of the Contract, such communications equipment which ensures that both written (facsimile or e-mail) and oral (voice) communications can be established at all times

(a) between the Leakage Manager and his senior field staff;

(b) between the Project Manager and the Leakage Manager;

(c) between the public telephone system and the Leakage Manager;

(d) The equipment to be provided and maintained includes the equipment located at the Project Manager's office.

5.4 Within 28 days of the Start Date of the Contract, the Contractor must communicate to the Employer the address of his office, including the postal, facsimile and e-mail address, which for the purposes of this contract is called the Leakage Management Office, where Notices will be addressed to. The Employer may require that the physical location of the Leakage Management Office is within the close geographical area of the Contract Area. If the Contractor fails to communicate the address of his Leakage Management Office, and the Employer is otherwise unable to locate the Leakage Manager, all notifications to the Contractor shall be valid if they are deposited at a designated location within the office of the Project Manager, and if a copy is sent to the Contractor's legal address.

6. Settlement of Disputes

6.1 Dispute Review Board

6.1.1 If any dispute of any kind whatsoever shall arise between the Employer and the Contractor in connection with or arising out of the Contract, including without prejudice to the generality of the foregoing, any question regarding its existence, validity or termination, or the execution of the Works and Services—whether during the progress of the execution or after completion and whether before or after the termination, abandonment or breach of the Contract—the parties shall seek to resolve any such dispute or difference by mutual consultation. If the parties fail to resolve such a dispute or difference by mutual consultation, then the matter in dispute shall, in the first place, be referred in writing by either party to the Disputes Review Board ('the Board'), with a copy to the other party.

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- 6.1.2 The Board shall be established when each of the three Board Members has signed a Board Member's Declaration of Acceptance as required by the DRB's Rules and Procedures (which, along with the Declaration of Acceptance form, are attached to the Contract). The Board shall comprise three Members experienced with the type of construction and services involved in the Contract and with the interpretation of contractual documents. One Member shall be selected by each of the Employer and the Contractor and approved by the other. If either of these Members is not so selected and approved within 28 days of the date of the Letter of Acceptance, then upon the request of either or both parties such Member shall be selected as soon as practicable by the Appointing Authority specified in the SCC. The third Member shall be selected by the other two and approved by the parties. If the two Members selected by or on behalf of the parties fail to select the third Member within 14 days after the later of their selections, or if within 14 days after the selection of the third Member, the parties fail to approve that Member, then upon the request of either or both parties such third Member shall be selected promptly by the same Appointing Authority specified in the SCC who shall seek the approval of the proposed third Member by the parties before selection but, failing such approval, nevertheless shall select the third Member. The third Member shall serve as Chairman of the Board.
- 6.1.3 In the event of death, disability, or resignation of any Member, such Member shall be replaced in the same manner as the Member being replaced was selected. If for whatever other reason a Member shall fail or be unable to serve, the Chairman (or failing the action of the Chairman then either of the other Members) shall inform the parties and such non-serving Member shall be replaced in the same manner as the Member being replaced was selected. Any replacement made by the parties shall be completed within 28 days after the event giving rise to the vacancy on the Board, failing which the replacement shall be made by the Appointing Authority in the same manner as described above. Replacement shall be considered completed when the new Member signs the Board Member's Declaration of Acceptance. Throughout any replacement process the Members not being replaced shall continue to serve and the Board shall continue to function and its activities shall have the same force and effect as if the vacancy had not occurred, provided, however, that the Board shall not conduct a hearing nor issue a Recommendation until the replacement is completed.
- 6.1.4 Either the Employer or the Contractor may refer a dispute to the Board in accordance with the provisions of the DRB's Rules and Procedures, attached to the Contract. The Recommendation of the Board shall be binding on both parties, who shall promptly give effect to it unless and until the same shall be revised, as hereinafter provided, in an arbitral award. Unless the Contract has already been repudiated or terminated, the Contractor shall continue to proceed with the Works and Services in accordance with the Contract.

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- 6.1.5 If either the Employer or the Contractor is dissatisfied with any Recommendation of the Board, or if the Board fails to issue its Recommendation within 56 days after receipt by the Chairman of the Board of the written Request for Recommendation, then either the Employer or the Contractor may, within 14 days after his receipt of the Recommendation, or within 14 days after the expiry of the said 56-day period, as the case may be, give notice to the other party of his intention to commence arbitration, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 6.3, no arbitration in respect thereof may be commenced unless such notice is given.
- 6.1.6 If the Board has issued a Recommendation to the Employer and the Contractor within the said 56 days and no notice of intention to commence arbitration as to such dispute has been given by either the Employer or the Contractor within 28 days after the parties received such Recommendation from the Board, the Recommendation shall become final and binding upon the Employer and the Contractor.
- 6.1.7 Whether or not it has become final and binding upon the Employer and the Contractor, a Recommendation shall be admissible as evidence in any subsequent dispute resolution procedure, including any arbitration or litigation having any relation to the dispute to which the Recommendation relates.
- 6.1.8 All Recommendations that have become final and binding shall be implemented by the parties forthwith.
- 6.1.9 All cost incurred by the Board will be equally shared by the Employer and the Contractor. The contractor shall pay all costs and will get 50% of the amount reimbursed from the Employer (out of the contingencies).

6.2 Arbitration

- 6.2.1 If either the Employer or the Contractor is dissatisfied with the Board's decision, then either the Employer or the Contractor may, in accordance with Sub-Clause 6.1.5, give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. The arbitral tribunal shall have full power to open up, review, and revise any decision, opinion, instruction, determination, certificate, and any Recommendation(s) of the Board.
- 6.2.2 Any dispute in respect of which a notice of intention to commence arbitration has been given, in accordance with GCC Sub-Clause 6.2.1, shall be finally settled by arbitration. Neither party shall be limited in

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the proceedings before such arbitration tribunal to the evidence or arguments put before the Board for the purpose of obtaining his Recommendation(s) pursuant to Sub-Clause 6.2.1. No Recommendation shall disqualify the Board from being called as a witness and giving evidence before the arbitrator(s) on any matter whatsoever relevant to the dispute. Arbitration may be commenced prior to or after completion of the Works and Services.

6.2.3 Arbitration proceedings shall be conducted in accordance with the rules of procedure designated in the SCC.

6.3 Where neither the Employer nor the Contractor has given notice of intention to commence arbitration of a dispute within the period stated in Sub-Clause 6.1.5 and the related Recommendation has become final and binding, either party may, if the other party fails to comply with such Recommendation and without prejudice to any other right it may have, refer the failure to arbitration in accordance with Sub-Clause 6.2. The provisions of Sub-Clause 6.1 shall not apply to any such reference

6.4 Notwithstanding any reference to the Board or Arbitration herein,

- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
- (b) the Employer shall pay the Contractor any monies due the Contractor.

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B. ASSIGNMENT OF RESPONSIBILITIES

- 7. Scope of Works and Services**
- 7.1 Unless otherwise expressly limited in the Technical Specifications, the Contractor's obligations cover the Design, the execution of all Works, the provision of all equipment and materials and the performance of all Services required to (i) reduce leakage in the contract area. It furthermore includes the (ii) initial establishment of District Meter Areas ("DMA Establishment Works"), (iii) the installation of new connections for new customers inside the contract area ("System Expansion Works") and provisions for (iv) "Emergency and Unforeseen Works" (for example the repair of leaks on trunk mains outside the contract area). At the same time the Contractor has to respect the plans, procedures, specifications, drawings, codes and any other documents as specified in the Technical Specifications. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in the Technical Specifications.
- 7.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work, services and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required as if such work, services and/or items and materials were expressly mentioned in the Contract.
- 8. Design Responsibility**
- 8.1 The Contractor shall be responsible for the Design and programming of the Works and Services, and for the accuracy and completeness of the information used for that design and programming in accordance with the requirements established in the Technical Specifications.
- 8.2 Specifications and Drawings
- 8.2.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract and the Technical Specifications, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.

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8.2.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof, provided or designated by, or on behalf of, the Employer, by giving a notice of such disclaimer to the Project Manager.

8.3 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied after approval by the Employer and shall be treated in accordance with GCC Clause 63.

8.4 Approval/Review of Technical Documents by Project Manager

8.4.1 For those Works specified in the SCC, the Contractor shall prepare (or cause its Subcontractors to prepare) and furnish to the Project Manager the documents listed in the Technical Specifications (List of Documents for Approval or Review) for its approval or review.

Unless otherwise specified in the SCC, the Contractor shall not be required to submit for the Employer's approval the Design or other technical documents concerning the Leakage Reduction Services remunerated through the performance payments.

Any part of the Works covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof.

GCC Sub-Clauses 8.4.2 through 8.4.7 shall apply only to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for his information or review only.

8.4.2 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Sub-Clause 8.4.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefore and the modifications that the Project Manager proposes.

If the Project Manager fails to take such action within the said fourteen (14) days, then the said document shall be deemed to have been approved by the Project Manager.

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- 8.4.3 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with some specified provision of the Contract or that it is contrary to good engineering practice.
- 8.4.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GCC Sub-Clause 8.4.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), whereupon the document shall be deemed to have been approved.
- 8.4.5 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the parties within a reasonable period, then such dispute or difference may be referred to the DRB (or DRE) for determination in accordance with GCC Sub-Clause 6.1 hereof. If such dispute or difference is referred to the DRB (or DRE), the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the DRB (or DRE) upholds the Contractor's view on the dispute and if the Employer has not given notice under GCC Sub-Clause 6.1.5 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the DRB (or DRE) shall decide, and the Time for Completion shall be extended accordingly.
- 8.4.6 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.
- 8.4.7 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GCC Sub-Clause 8.4.

If the Project Manager requests any change in any already approved document and/or in any document based thereon, the provisions of GCC Clause 63.2 shall apply to such request.

9. Copyright

- 9.1 The copyright in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein

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- shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.
- 10. Time for Commencement and Completion**
- 10.1 The Contractor shall commence the Works and Services within the period specified in the SCC and shall thereafter proceed in accordance with the time schedule specified in the corresponding Time Schedule stated in the SCC.
- 10.2 The Contractor shall attain Completion of the Works and Services (or of a part where a separate time for Completion of such part is specified in the Contract) within the Time Schedule included in the SCC or within such extended time to which the Contractor shall be entitled under GCC Clause 64 hereof.
- 11. Contractor's Responsibilities**
- 11.1 The Contractor shall design and carry out the Works and Services (including associated purchases and/or subcontracting) necessary to comply with the requirements established in the Technical Specifications with due care and diligence in accordance with the Contract.
- 11.2 The Contractor confirms that he has entered into this Contract on the basis of a proper examination and interpretation of the situation based on the limited information and data provided by the Employer and on the basis the general understanding that (i) the water distribution network drawings might be substantially wrong, (ii) the exact leakage level in the as well as the general condition of the infrastructure is unknown and that (iii) leak detection might be technically difficult under the given low pressure situation. The Contractor acknowledges that any failure to acquaint itself with all available data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Works and Services.
- 11.3 The Contractor shall acquire in its name all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country of the Employer that are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Employer under GCC Sub-Clause 14.3 hereof and that are necessary for the performance of the Contract.
- 11.4 The Contractor shall comply with all laws in force in the country of the Employer and where the Works and Services are carried out. The laws will include all local, state, national or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel,

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including the Subcontractors and their personnel, but without prejudice to GCC Sub-Clause 14.1 hereof.

11.5 Any Plant, Material and Services that will be incorporated in or be required for the Works and Services and other supplies shall have their origin in an eligible Country as defined under the Bank's procurement guidelines.

11.6 The Contractor shall permit the World Bank to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the World Bank, if so required by the World Bank.

12. Subcontracting

12.1 The Contractor may subcontract activities listed in the SCC. Any other activity under the Contract may be subcontracted only when approved by the Project Manager. The Contractor may not assign the entire Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations nor relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any Subcontractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen.

12.2 Notwithstanding GCC Sub-Clause 12.1, the Contractor may subcontract under his own responsibility and without prior approval of the Employer the small Works and Services also listed in the SCC.

13. Assignment of Contract

13.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other party (which consent shall not be unreasonably withheld), assign to any third party the Contract or any part thereof, or any right, benefit, obligation or interest therein or hereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

14. Employer's Responsibilities

14.1 The Employer shall apply due diligence to ensure the accuracy of all information and/or data to be supplied to the Contractor as described in the Technical Specifications, except when otherwise expressly stated in the Contract.

14.2 The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the corresponding Technical Specifications. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in the SCC.

14.3 The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located, when such

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authorities or undertakings require the Employer to obtain them in the Employer's name, are necessary for the execution of the Contract, and are specified in the corresponding Technical Specifications.

14.4 If requested by the Contractor, the Employer shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.

14.5 The Employer shall be responsible for the continued operation of the Water Distribution System after Completion, in accordance with GCC Sub-Clause 28, and shall be responsible for facilitating the Guarantee Test(s), in accordance with GCC Sub-Clause 20.

14.6 All costs and expenses involved in the performance of the obligations under this GCC Clause 14 shall be the responsibility of the Employer, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GCC Sub-Clause 20.

15. Confidential Information

15.1 The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this GCC Clause 15.

15.2 The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than those related to the execution and supervision of the contract and the operation and maintenance of the system after completion. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Plant and Equipment, construction or such Works and Services as are required for the performance of the Contract.

15.3 The obligation of a party under GCC Sub-Clauses 15.1 and 15.2 above, however, shall not apply to that information which

- (a) now or hereafter enters the public domain through no fault of that party;
- (b) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or

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indirectly, from the other party hereto;

- (c) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.

15.4 The above provisions of this GCC Clause 15 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Works and Services or any part thereof.

15.5 The provisions of this GCC Clause 15 shall survive termination, for whatever reason, of the Contract.

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C. EXECUTION OF WORKS AND SERVICES

16. Representatives 16.1 Project Manager

If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of the Works and Services. Such appointment shall only take effect upon receipt of such notice by the Contractor.

The Project Manager shall represent and act for the Employer at all times during the currency of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.

All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.

The Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

16.2 Leakage Manager

16.2.1 If the Leakage Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Contractor shall appoint the Leakage Manager and shall request the Employer in writing to approve the person so appointed. If the Employer makes no objection to the appointment within fourteen (14) days, the Leakage Manager shall be deemed to have been approved. If the Employer objects to the appointment within fourteen (14) days giving the reason therefore, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GCC Sub-Clause 16.2.1 shall apply thereto.

16.2.2 The Leakage Manager shall represent and act for the Contractor at all times during the currency of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract. The Leakage Manager shall be in charge of the day-to-day management of the services to be provided under the contract on behalf of the Contractor, and shall have legal and all other faculties to take all necessary decisions

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related to the execution of the contract.

All notices, instructions, information and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Leakage Manager or, in its absence, its deputy, except as herein otherwise provided.

The Contractor shall not revoke the appointment of the Leakage Manager without the Employer's prior written consent, which shall not be unreasonably withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Leakage Manager, pursuant to the procedure set out in GCC Sub-Clause 16.2.1.

16.2.3 The Leakage Manager may, subject to the approval of the Employer (which shall not be unreasonably withheld), at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Leakage Manager, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GCC Sub-Clause 16.2.3 shall be deemed to be an act or exercise by the Leakage Manager.

16.2.4 From the commencement of the Works and Services at the Site until Completion, the Leakage Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Leakage Manager is absent from the Site, a suitable person shall be appointed to act as his or her deputy.

16.2.5 The Employer may by notice to the Contractor object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Employer, may behave inappropriately, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under the Technical Specifications. The Employer shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

16.2.6 If any representative or person employed by the Contractor is removed in accordance with GCC Sub-Clause 16.2.5, the Contractor shall, where required, promptly appoint a replacement.

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17. Work Program 17.1 Contractor's Organization

The Contractor shall supply to the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out the Works and Services. The chart shall include the identities of the key personnel together with the curricula vitae of such key personnel to be employed as included in the Contractor's Bid. The Contractor shall promptly inform the Project Manager in writing of any revision or alteration of such an organization chart.

17.2 Program of Performance

Within twenty-eight (28) days after the date of signing the Contract Agreement, the Contractor shall prepare and supply to the Project Manager a program of performance of the Contract, made in the form specified in the Technical Specifications and showing the sequence in which it proposes to design and carry out the Works and Services, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion in accordance with the Contract. The Contractor shall update and revise the program as and when appropriate, but without modification in the Times for Completion given in the SCC and any extension granted in accordance with GCC Clause 64, and shall supply all such revisions to the Project Manager.

17.3 Progress Report

The Contractor shall monitor progress of all the activities specified in the program referred to in GCC Sub-Clause 17.2 above, and supply a progress report to the Project Manager every quarter together with his Quarterly Statement. The progress report shall be in a form acceptable to the Project Manager in accordance with the Technical Specifications.

17.4 Progress of Execution

If at any time the Contractor's actual progress falls behind the program referred to in GCC Sub-Clause 17.2, or it becomes apparent that it will so fall behind, the Contractor shall prepare and supply to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Works and Execution of Services activities within the Time for Completion under GCC Sub-Clause 10.2, any extension thereof entitled under GCC Sub-Clause 64, or any extended period as may otherwise be agreed upon between the Employer and the Contractor.

17.5 Work Procedures

The Contract shall be executed in accordance with the Contract Documents and the procedures given in the Technical Specifications.

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18. Execution of Works

18.1 Setting Out/Supervision/Labor

18.1.1 *Benchmark.* The Contractor shall be responsible for the true and proper setting-out of the Works in relation to benchmarks, reference marks and lines provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of execution of the Works, any error shall appear in the position, level or alignment of the Works, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

18.1.2 *Contractor's Supervision.* The Contractor shall give or provide all necessary superintendence during the execution of the Works, and the Leakage Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the execution. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

18.2 Contractor's Equipment

18.2.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.

18.2.2 Unless otherwise specified in the Contract, upon completion of the Works, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.

18.2.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.

18.3 Site Regulations and Safety

The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the

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Employer's approval, which approval shall not be unreasonably withheld.

Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety, gate control, sanitation, medical care, and fire prevention.

18.4 Opportunities for Other Contractors

18.4.1 The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable opportunities for carrying out the work to any other Contractors employed by the Employer on or near the Site.

18.4.2 If the Contractor, upon written request from the Employer or the Project Manager, makes available to other Contractors any parts of the distribution system for which the Contractor is responsible, permits the use by such other Contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other Contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other Contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.

18.4.3 The Contractor shall also so arrange to perform its work and services as to minimize, to the extent possible, interference with the work of other Contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other Contractors and the workers of the Employer in regard to their work and services.

18.4.4 The Contractor shall notify the Project Manager promptly of any defects in the other Contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

18.5 Site Clearance

18.5.1 *Site Clearance in Course of Execution:* In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

18.5.2 *Clearance of Site after Completion:* After Completion of all parts of the Works, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site clean and safe.

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18.6 Watching and Lighting

The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Works and Services, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

18.7 Mains Flushing

The contractor shall pay to the Employer water used for flushing after pipeline installation. The applicable tariff is as per the SCC.

18.8 Access to the Site

The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

18.9 Management Meetings

18.9.1 Either the Project Manager or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised by either the Contractor or the Employer. Management meetings will be held at least monthly.

18.9.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either during or after the management meeting and stated in writing to all who attended the meeting.

19. Staff and Labor 19.1 The Contractor shall employ the key personnel named in the Contractor's Bid, to carry out the functions stated in the Technical Specifications or other personnel approved by the Project Manager. The Project Manager will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Contractor's Bid.

19.2 Labor

- (a) The Contractor shall provide and employ on the Site for the execution of the Works and Services such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills.
- (b) Unless otherwise provided in the Contract, the Contractor shall be responsible for the recruitment, transportation,

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accommodation and catering of all labor, local or expatriate, required for the execution of the Contract and for all payments in connection therewith.

- (c) The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located.
- (d) The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to their various home countries. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.
- (e) The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.
- (f) The Contractor shall provide lodging, medical assistance, alimentation and sanitary installations for the employees living in the field working places to comply with the Social, Sanitary and Health Conditions of Labor requirements established in the Technical Specifications. The Contractor shall also take all necessary actions to control the spread of communicable diseases.
- (g) The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor.
- (h) The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this

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responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

HIV-AIDS Prevention: The Contractor shall conduct an HIV-AIDS awareness program via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Consultants' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Works under Clause 17 [Program] an alleviation program for Site staff and labour and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation

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this program shall not exceed the Provisional Sum dedicated for this purpose.

19.3 Removal of staff

If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, including the Contractor's key staff, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

19.4 Work at Night and on Holidays

19.4.1 Unless otherwise provided in the Contract, if and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Employer's consent thereto (if such consent is needed), the Employer shall not unreasonably withhold such consent.

19.4.2 Leak Detection is mainly carried out during night hours and therefore the Employer's consent for all activities required for or related to Leak Detection Activities is automatically considered granted and does not have to be requested.

19.4.3 In cases where the traffic situation or the requirements of the excavation permit requires the Contractor to carry out or complete excavation, civil and installation or other works during night hours the Employer's consent for all such activities is automatically considered granted and does not have to be requested.

20. Test and Inspection

20.1 The Contractor shall at its own expense carry out on the Site all such tests and/or inspections as are specified in the Technical Specifications, and in accordance with the procedures described in the Technical Specifications and any test not explicitly listed but required by the Project Manager.

20.2 The Employer and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection.

20.3 For tests to be carried out on the initiative of the Contractor, whenever the Contractor is ready to carry out any such test and/or inspection, he shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third party any necessary permission or consent to enable the Employer and the Project Manager (or their designated representatives) to attend the test and/or inspection. The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection.

20.4 If the Employer or Project Manager (or their designated representatives) fails to attend a scheduled test and/or inspection, or if it is agreed between the

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parties that such persons shall not attend, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.

- 20.5 The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of the works and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.
- 20.6 If any DMA Establishment Works, System Expansion Works, Leak Repair Works or Emergency Works fail to pass any test and/or inspection, the Contractor shall either rectify or replace such works and shall repeat the test and/or inspection upon giving a notice under GCC Sub-Clause 20.3.
- 20.7 If any dispute or difference of opinion shall arise between the parties in connection with or arising out of the test and/or inspection of the Works and Services, or part of them, that cannot be settled between the parties within a reasonable period of time, it may be referred to the RDB (or DRE) for determination in accordance with GCC Sub-Clause 6.1.
- 20.8 The Contractor agrees that neither the execution of a test and/or inspection of the Works and Services or any part of them, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to GCC Sub-Clause 20.4, shall release the Contractor from any other responsibilities under the Contract.
- 20.9 No part or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such part or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.
- 20.9.1 This expressly also includes all leak repairs and installation of customer service connections.
- 20.10 The Contractor shall uncover any part of the Works or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any parts of the Works or foundations have been covered up at the Site after compliance with the requirement of GCC Sub-Clause 20.9 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be

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reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

- 21. DMA Establishment Works**
- 21.1 If so indicated in the SCC, specific DMA Establishment Works shall be carried out explicitly in accordance with the Technical Specifications and as specified in the bidding documents and in the Contractor's Bid. Input quantities for DMA Establishment Works were estimated by the Contractor to establish all DMAs listed in the SCC and shown on the relevant drawings. The specific DMA Establishment Works were offered by the Contractor at a Lump-Sum unit price per DMA established plus two extra-over items to cover for special situations: (i) Laying of main pipes if required pipe length exceeds [20] m (mains up to [20] m are included in the lump-sum rate); and (ii) Re-location of customer service connections from mains outside the DMA to mains inside the DMA.
- 22. Leakage Reduction and Management Services**
- 22.1 Leakage Reduction and Management Services are those activities necessary for achieving and maintaining lower levels of physical water losses in accordance with the Performance Standards pursuant to GCC Clause [24]. These services shall include all activities, works, installations, materials and other cost required to reduce Leakage Levels and afterwards maintain these levels. These Services will be remunerated by a small Lump-Sum amount (to cover overheads and similar) for the period of the contract paid in fixed quarterly payments during the entire Contract period and a performance fee, paid in quarterly payments according to the volume of water saved.
- 23. System Expansion Works**
- 23.1 If so indicated in the SCC, System Expansion Works will consist of the installation of customer service connections to connect new customers in the contract area. This will occasionally also require the installation of short sections of distribution main pipelines. Expansion Works were offered at unit prices included in the Bill of Quantities.
- 23.2 The execution of Expansion Works might either be (i) suggested by the Contractor or (ii) requested by the Employer. In either case they have to be ordered by the Project Manager, who will issue a Work Order defining the requested works to be carried out by the Contractor, based on the activities priced in the Bill of Quantities. The Work order shall specify the activities to be carried out and the corresponding price. The Leakage Manager shall confirm his acceptance by signing the Work Order.
- 24. Emergency or other Unforeseen Works**
- 24.1 If so indicated in the SCC the Contractor might occasionally be requested to carry out Emergency or other Unforeseen Works. Such works will consist of activities not covered by any other works or services category of this contract, for example leak repairs on trunk mains outside the DMAs or the replacement of distribution mains inside a DMA. Emergency or other Unforeseen Works were offered at unit prices included in the Bill of Quantities.
- 24.2 The execution of Emergency or other Unforeseen Works shall be requested by the Project Manager, who will issue a Work Order defining the requested

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works to be carried out by the Contractor, based on the activities priced in the Bill of Quantities. The Work order shall specify the activities to be carried out and the corresponding price. The Leakage Manager shall confirm his acceptance by signing the Work Order.

25. Contractor's Self-Control of Quality and Safety

25.1 The Contractor shall, throughout the execution and completion of the Works and Services, maintain a System which shall ensure that the work methods and procedures are adequate and safe at all times and do not pose any avoidable risks and dangers to the health, safety and property of the workers and agents employed by him or any of his subcontractors, of water customers, of road users or persons living in the vicinity of the contract area.

25.2 Unless specified otherwise in the SCC, the Contractor shall establish, within his own organizational structure, a specific Unit staffed with qualified personnel, whose task is to verify continuously leakage levels in the DMAs. That Unit will also be responsible for the generation and presentation of the information needed by the Contractor for the documentation required as defined in the Technical Specifications. The Unit will be responsible for maintaining a detailed and complete knowledge of flow, pressure and leakage data and to provide to the Leakage Manager all the information needed in order to efficiently manage the DMAs.

25.3 The Contractor's Self-Control Unit mentioned in GCC Sub-Clause 25.2 shall report the level of achieved leakage reduction in the standard format presented in the Technical Specifications.

25.4 The Unit shall also, in close collaboration, support the Project Manager in the verifications of the leakage reduction achievements.

26. Environmental and Safety Requirements

26.1 The Contractor shall, throughout the design, execution and completion of the Works and Services, and the remedying of any defects therein:

- (a) have full regard for the safety of all persons entitled to be on the Site and keep the Site (so far as the same is under his control) and the Works and Services (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons;
- (b) provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by Sub-Clause 18.3 of the Contract or by any duly constituted authority, for the protection of the Works and Services or for the safety and convenience of the public or others; and
- (c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of the works.

27. Work Orders for System Expansion

27.1 System Expansion Works and Emergency and other Unforeseen Works shall be executed by the Contractor on the basis of Work Orders issued by the

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Works; and Emergency and other Unforeseen Works	Project Manager.
	27.2 Work Orders shall be issued in writing and shall include the date on which the Work Order was issued and the signature of the Project Manager. Two copies of the Work Order shall be transmitted by the Project Manager to the Contractor, who shall immediately countersign one copy, including the date of acceptance, and return it to the Project Manager.
	27.3 If the Contractor has any objection to a Work Order, the Leakage Manager shall notify the Project Manager of his reasons for such objection within ten (10) days of the date of issuing the Work Order. Within five (5) days of the Leakage Manager's objection, the Project Manager shall cancel, modify or confirm the Work Order in writing.
28. Substantial Completion and Taking Over Procedures	28.1 When the Leakage Reduction Period has been successfully completed the Contractor may give a notice to that effect to the Project Manager, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Project Manager to issue a Taking-Over Certificate in respect of the Works and Services. The Project Manager shall, within twenty-one (21) days of the date of delivery of such notice, either issue to the Contractor a Certificate of Substantial Completion, stating the date on which the Works and Services were substantially completed in accordance with the Contract, or give instructions in writing to the Contractor specifying all the conditions to be complied with and all the work which is required to be done by the Contractor before the issue of such Certificate. The Project Manager shall also notify the Contractor of any defects in the Works and Services affecting substantial completion that may appear after such instructions and before completion of Taking-Over Certificate within twenty-one (21) days of completion, to the satisfaction of the Project Manager, of the Works and Services so specified and remedying any defects so notified.
	28.2 At the end of the Maintenance Period, when the whole of the Works and Services have been substantially completed, the Contractor may give a notice to that effect to the Project Manager, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Project Manager to issue a Taking-Over Certificate in respect of the Works and Services. The Project Manager shall, within twenty-one (21) days of the date of delivery of such notice, either issue to the Contractor a Taking-Over Certificate, stating the date on which the Works and Services were substantially completed in accordance with the Contract, or give instructions in writing to the Contractor specifying all the conditions to be complied with and all the work which is required to be done by the Contractor before the issue of such Certificate. The Project Manager shall also notify the Contractor of any defects in the Works and Services affecting substantial completion that may appear after such instructions and before completion of Taking-Over Certificate within twenty-one (21) days of completion, to the satisfaction of the Project Manager, of the Works and

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Services so specified and remedying any defects so notified.

- 28.3 Similarly, in accordance with the procedure set out in Sub-Clause 28.1, the Contractor may request and the Project Manager shall issue a Taking-Over Certificate in respect of:
- (a) any Works and Services in respect of which a separate Time for Completion is provided in the SCC,
 - (b) any substantial part of the Works and Services outside the DMAs which has been both completed to the satisfaction of the Project Manager and, otherwise than as provided for in the Contract, occupied or used by the Employer, or
 - (c) any part of the Works and Services which the Employer has elected to occupy or use prior to completion (where such prior occupation or use is not provided for in the Contract or has not been agreed by the Contractor as a temporary measure).
- 29. Quality of materials used by Contractor**
- 29.1 The quality of materials used by the Contractor for the execution of the Contract shall be in compliance with the requirements of the Technical Specifications. If the Contractor is of the opinion that materials of higher quality than those stated in the Technical Specifications need to be used in order to ensure compliance with the Contract, he shall use such better materials, without being entitled to higher prices or remunerations.
- 29.2 Under no circumstances may the Contractor make any claim based on the insufficient quality of materials used by him, even if the material used was authorized by the Project Manager.
- 29.3 The Contractor shall carry out at his own cost the laboratory and other tests that he needs to verify if materials to be used comply with the Technical Specifications, and shall keep records of such tests. If requested by the Project Manager, the Contractor shall hand over the results of the tests.
- 29.4 Materials listed in the SCC must be inspected in the Factory prior to shipment by the Project Manager and the Employer's representatives.
- 30. Signaling, demarcation of work zones, traffic interruptions and excavation permits**
- 30.1 To ensure the safety of road users, including non-motorized road users and pedestrians, the Contractor is responsible to install and maintain at his cost the adequate signaling and demarcation of work sites, which in addition must comply with the applicable legislation.
- 30.2 Excavation permits are not required for leak repair and service connection replacement. The Contractor is only obliged submit the schedule of planned excavations on a regular basis (time interval to be decided by the Project Manager) to the Employer who will forward this list for information only to the Department of Communication, Transportation and Public Works.
- 30.3 For construction works that require excavation permits (for example, but not limited to, construction of DMA inflow chambers, pipeline replacement or installation) the contractor shall submit a complete set of required documents (as per Appendix) to the Employer who will forward it to

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the Department of Communication, Transportation and Public Works for approval. If the supporting documents are complete, the Department shall issue the permit within 10 working days.

- 30.4 All cost for excavation permits will be paid by the Employer.
- 30.5 If the execution of services and works under the contract is likely to interfere with traffic, the Contractor shall take at his cost the measures necessary to limit such interference to the strict minimum, or any danger to the workers or others.
- 30.6 The Contractor shall inform the local authorities and the local police about such activities to be carried out by him which may cause any significant interruptions or changes to the normal traffic patterns. Upon request from the Contractor, the Employer shall assist the Contractor in the coordination with the local authorities and the local police.

31. Water Supply Interruptions

- 31.1 The Contractor shall make all efforts to minimize the number of water supply interruptions in general and the number of cut-off customers per supply interruption in particular.
- 31.2 The Contractor shall take all necessary steps to inform affected customers according to the local legal requirements and practice. The Contractor shall bear the cost of all these activities, including announcements in the local press and other means of communications.
- 31.3 The Contractor shall inform the Employer of all water supply interruptions and closely co-ordinate with the Employer's operations staff.

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D. ALLOCATION OF RISKS

- 32. Employer's Risks**
- 32.1 From the Start Date until the Defects Correction Certificate has been issued, the following are Employer's risks insofar as they directly affect the execution of the Works and Services included in this Contract:
- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies;
 - (b) rebellion, revolution, insurrection, military or usurped power, or civil war;
 - (c) ionizing radiations, contamination by radioactivity from any nuclear fuel, or any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof;
 - (d) pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds;
 - (e) riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Subcontractors and arising from the conduct of the Works and Services;
 - (f) loss or damage due to the use or occupation by the Employer of any Section or part of the Permanent Works, except as may be provided for in the Contract;
 - (g) any operation of the forces of nature against which an experienced Contractor could not reasonably have been expected to take precautions.
- 33. Contractor's Risks**
- 33.1 The Employer carries the risks which this Contract states are Employer's risks, and the remaining risks are the Contractor's risks.
- 34. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification**
- 34.1 Subject to GCC Sub-Clause 34.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property (other than the Facilities whether accepted or not), arising in connection with the execution and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Employer, its Contractors, employees, officers or agents.
- 34.2 If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GCC Sub-Clause 34.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

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If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

34.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 35, provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.

34.4 The party entitled to the benefit of an indemnity under this GCC Clause 34 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the party fails to take such measures, the other party's liabilities shall be correspondingly reduced.

35. Insurance

35.1 To the extent specified in the SCC, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said SCC. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a) *Loss of or damage to the Plant and Materials*

Covering loss or damage occurring prior to Completion.

(b) *Third Party Liability Insurance*

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(c) *Automobile Liability Insurance*

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the execution of the Contract.

(d) *Workers' Compensation*

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

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(e) *Employer's Liability*

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(g) *Other Insurances*

Such other insurances as may be specifically agreed upon by the parties.

- 35.2 The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 35.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 35.1 except for the Cargo Insurance During Transport, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies.
- 35.3 The Contractor shall deliver to the Employer certificates of insurance (or copies of the insurance policies) as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.
- 35.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.
- 35.5 If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 35.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor.
- 35.6 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 35, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

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36. Unforeseen Conditions

36.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions (other than climatic conditions) or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced Contractor on the basis of reasonable examination of the data provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site or other data readily available, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Plant and Equipment or Contractor's Equipment, notify the Project Manager in writing of

- (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;
- (b) the additional work and/or Plant and Equipment and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;
- (c) the extent of the anticipated delay;
- (d) the additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this GCC Sub-Clause 36.1, the Project Manager decides upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.

36.3 Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Sub-Clause 36.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.

36.4 If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Sub-Clause 36.1, the Time for Completion shall be extended in accordance with GCC Clause 64.

36.5 Incorrect information on the condition and location of the distribution network, like incorrectness of maps of the distribution network in respect to wrong location, diameter, material, age or other information of pipelines shown or pipelines additionally found and not shown on the map or overall condition of the network is expressly excluded from being considered Unforeseen Condition and thus the entire GCC clause 36 is not applicable.

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- 36.6 Actual leakage levels higher or lower than the average figure used for the comparison of the bid prices as well as all technical difficulties with leak detection in low pressure systems, at locations with high ground water level or high background and traffic noise are expressively excluded from being considered Unforeseen Condition and thus the entire GCC clause 36 is not applicable.
- 37. Change in Laws and Regulations**
- 37.1 If provided so in the SCC, if after the date twenty-eight (28) days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the SCC.
- 38. Force Majeure**
- 38.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, insofar as they directly affect the execution of the Services and Works included in this Contract and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:
- (a) war, hostilities or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy and civil war;
 - (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts;
 - (c) confiscation, nationalization, mobilization, commandeering, requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority;
 - (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague;
 - (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster;
 - (f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

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- 38.2 If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.
- 38.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GCC Clause 64.
- 38.4 The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract under GCC Sub-Clause 38.6.
- 38.5 No delay or nonperformance by either party hereto caused by the occurrence of any event of Force Majeure shall
- (a) constitute a default or breach of the Contract;
 - (b) give rise to any claim for damages or additional cost or expense occasioned thereby;
- if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.
- 38.6 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which either party may terminate the Contract by giving a notice to the other, but without prejudice to either party's right to terminate the Contract under GCC Clause 59.
- 38.7 In the event of termination pursuant to GCC Sub-Clause 38.6, the rights and obligations of the Employer and the Contractor shall be as specified in GCC Sub-Clauses 59.1.2 and 59.1.3.
- 38.8 Notwithstanding GCC Sub-Clause 38.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

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E. GUARANTEES AND LIABILITIES

- 39. Completion Time Guarantee and Liability**
- 39.1 The Contractor guarantees that it shall attain Completion of the Works and Services (or a part for which a separate time for completion is specified in the SCC) within the Time for Completion specified in the SCC pursuant to GCC Sub-Clause 10.2, or within such extended time to which the Contractor shall be entitled under GCC Clause 64 hereof.
- 39.2 If the Contractor fails to attain Completion of the Works and Services or any part thereof within the Time for Completion or any extension thereof under GCC Clause 64, the Contractor shall pay to the Employer liquidated damages, or shall receive reduced payments, for such default and not as a penalty (which sum shall be the only monies due from the Contractor for such default) for every day or part of the day which shall elapse between the relevant Time for Completion and the date stated in a Taking-Over Certificate of the whole of the Works and Services or the relevant Section, in accordance with the SCC. The aggregate amount of such liquidated damages and payment reductions, including all payment reductions under GCC Clause 40, shall in no event exceed the “aggregate liability” in accordance with GCC Clause 42. Once the “aggregate liability” is reached, the Employer may consider termination of the Contract, pursuant to GCC Sub-Clause 59.2. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works and Services, or from any other of his obligations and liabilities under the Contract.
- 40. Performance Guarantee, Liability and Liquidated Damages**
- 40.1 The Contractor guarantees that the quarterly DMA establishment targets are met.
- 40.2 If, for reasons attributable to the Contractor, the quarterly DMA establishment targets are not met, the Contractor shall, at the Contractor’s choice, either
- (a) make such changes, modifications and/or additions to the Works and Services or any part thereof that are necessary to meet the requirements latest within 90 days after the target date at his cost and expense, or
 - (b) pay liquidated damages to the Employer in accordance with the provisions in the corresponding Clause in the SCC and prepare a revised DMA establishment schedule and submit to the Project Manager for approval.
- Liquidated damages under GCC Sub-Clause 40.2 will be calculated on a quarterly basis.
- 40.3 The Contractor guarantees that the annual Minimum Leakage Reduction Targets as specified in the SCC are met.
- 40.4 If, for reasons attributable to the Contractor, the annual Minimum Leakage Reduction Targets are not met, the Contractor shall, at the Contractor’s choice, either

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- (a) make such changes, modifications and/or additions to the Works and Services or any part thereof that are necessary to meet the requirements latest within 30 days after the target date at his cost and expense, or
- (b) pay liquidated damages to the Employer in accordance with the provisions in the corresponding Clause in the SCC.

Liquidated damages under GCC Sub-Clause 40.4 will be calculated at the end of every contract year.

40.5 The Contractor guarantees that Leakage levels in already repaired DMAs will be maintained in a bandwidth as specified in TSP C 4.5.

40.6 If, for reasons attributable to the Contractor, leakage levels in the DMAs increase more than the relevant Clause in the SCC allows, the Contractor shall, at the Contractor's choice, either

- (a) make such changes, modifications and/or additions to the Works and Services or any part thereof that are necessary to meet the requirements at his cost and expense, or
- (b) pay liquidated damages to the Employer in respect of the higher water losses of DMAs for every day as per the detailed provisions in TSP C 4.5.

40.8 The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

40.9 At the end of the Leakage Reduction Phase the payment of liquidated damages under GCC Sub-Clause 40.2 and 40.4 up to the limitation of liability specified in the SCC, shall completely satisfy the Contractor's guarantees under GCC Sub-Clause 40.1 and 40.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof.

40.10 Only at the end of the Maintenance Period the payment of liquidated damages under GCC Sub-Clause 40.6 up to the limitation of liability specified in the SCC, shall completely satisfy the Contractor's guarantees under GCC Sub-Clause 40.5, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof.

41. Defect Liability 41.1 The Contractor warrants that the Works and Services or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Works and Services executed.

41.2 The Defect Liability Period shall be eighteen (18) months from the date of Substantial Completion (as per GCC Sub-Clause 28.1) of the Contract (or any part thereof) or from the date a Taking Over Certificate is issued as per GCC Sub-Clause 28.3 for a particular part of the Works and Services.

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Works and Services executed by the Contractor, the Contractor shall promptly, in consultation and

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agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Contractor shall, at its discretion, determine) such defect as well as any other damages caused by the defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage arising out of or resulting from improper operation or maintenance of the water distribution system by the Employer after taking over.

- 41.3 The Contractor's obligations under this GCC Clause 41 shall not apply to:
- (a) any materials that are supplied by the Employer, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein;
 - (b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein;
 - (c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GCC Sub-Clause 41.6;
 - (d) new leaks (in new locations) that occur after the last day of the Maintenance Period (Completion of the Contract).
- 41.4 The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.
- 41.5 The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 41.
- The Contractor may remove from the Site any Plant and Equipment or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.
- 41.6 If the Contractor fails to commence the work necessary to remedy such defect or any damage caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or claimed under the Performance Security.
- 41.7 If the any part of the water distribution system cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the such part, shall be extended by a period equal to the period during which

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the part cannot be used because of any of the aforesaid reasons.

41.8 Except as provided in GCC Clauses 40 and 41, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the distribution system or any part thereof, the Plant and Equipment, design or engineering or work executed that appear after Completion of the Works and Services, except where such defects are the result of the gross negligence, fraud, criminal or willful action of the Contractor.

42. Limitation of Liability

42.1 Except in cases of criminal negligence or willful misconduct,

(a) the Contractor shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the Employer and

(b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the total amount specified in the SCC, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

43. Liability for Damages through Mains Bursts

43.1 The Contractor cannot be held liable for damages of any kind arising out of water pipeline bursts unless those bursts have been caused directly by excavation works, criminal acts, willful misconduct or gross negligence of the Contractor.

43.2 Under no circumstances can the Contractor be held liable for damages of any kind and to anyone arising out of water supply interruptions, including any indirect or consequential loss or damage, illness or death, loss of use, loss of production, or loss of profits or interest costs.

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F. PAYMENT

- 44. Contract Price**
- 44.1 The Contract Price shall be as specified in the Form of Contract Agreement to be paid in the currencies indicated in the SCC.
- 44.2 Unless indicated otherwise in the SCC, and except in the event of a Change as provided for in the Contract, the Contract Price shall be:
- (a) For General Requirements, a lump-sum to be paid in quarterly installments
 - (b) For DMA Establishment Works:
 - 1.) a Lump-sum price per DMA established;
 - 2.) a unit rate for additional DMA inflow chambers and a unit rate for laying of main pipes if the required pipe length exceeds [20] m (up to [20] m mains laying is included in (1));
 - 3.) a unit rate for re-location of customer service connections from mains outside the DMA to mains inside the DMA..
 - (c) For Leakage Reduction and Management Services:
 - 1.) Fixed Fee: a firm lump sum to be paid in quarterly installments;
 - 2.) Performance Fee: a unit rate per m³ of water saved, to be paid in quarterly installments in accordance with the water loss reduction volume of the respective quarter.
 - (d) For System Expansion Works, unit prices included in the Bill of Quantities;
 - (e) For Emergency and other Unforeseen Works, unit prices included in the Bill of Quantities.
- 44.3 The contract price includes all cost for the factory inspection according to SCC 29.4 by the Employer's representative and/or the Project Manager's representative (including the cost of return air fares, full board accommodation, local transportation, and all other expenses for parties of three for each inspection).
- 44.4 The Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.
- 45. Advance Payment**
- 45.1 The Employer shall make advance payment to the Contractor of the amounts and by the date stated in the SCC, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The Guarantee shall remain effective until the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on the advance payment.

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- 45.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for the execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager.
- 45.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works and Services on a payment basis as indicated in the SCC.
- 46. Bill of Quantities**
- 46.1 The Bill of Quantities shall contain items for Groups of Activities which include the provision of Services (measured by achieved loss reduction) and Works and Supplies (measured by unit of outputs or of products).
- 46.2 DMA Establishment Works will be remunerated by a Lump-Sum unit rate per DMA established and additional extra-over items (see Clause 44.2.(a). Payments will be made in accordance with the number of DMAs satisfactorily established and ready for the start of leakage reduction activities. The Lump-sum unit rate includes only 1 inflow point per DMA. The prices shall be those stated in the Bill of Quantities. In case two or more inflow chambers are necessary for a DMA, the Contractor shall submit a request with all supporting documents (including hydraulic calculations) to the Project Manager. If approved, the unit rate from the BoQ shall be used.
- 46.3 Leakage Reduction and Management Services shall be measured and billed separately and will be remunerated by (i) a lump-sum amount for the period of the contract paid in fixed quarterly payments during the entire Contract period and (ii) a unit rate per m3 of leakage reduction achieved and (iii) a unit rate per illegal connection detected. The values for remuneration of the Leakage Reduction and Management Services are those stated in the Bill of Quantities.
- 46.4 System Expansion Works will be remunerated by unit prices. Each System Expansion Work Order issued by the Project Manager will include a lump-sum price for the works to be performed. Upon completion of the work order, the Lump-Sum price for the System Expansion Works will be submitted by the Contractor to the Project Manager. Once approved, payments will be made included in the quarterly invoice. The prices shall be those stated in the Bill of Quantities.
- 46.5 Emergency and other Unforeseen Works will be remunerated by unit prices. Each Emergency and other Unforeseen Works Order issued by the Project Manager will include a lump-sum price for the works to be performed. Upon completion of the work order, the Lump-Sum price for the Emergency and other Unforeseen Works will be submitted by the Contractor to the Project Manager. Once approved, payments will be made included in the quarterly invoice. The prices shall be those stated in the Bill of Quantities.
- 46.6 The Bill of Quantities is used to calculate the Contract Price. Only the quarterly fixed amount for Leakage Reduction and Management Services is a

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Lump-Sum price. The performance based component for the Leakage Reduction and Management Services, the DMA Establishment Works, the System Expansion Works and the Emergency and other Unforeseen Works amounts included in the Contract are estimates on the basis of the unit prices included in the Contractor's Bid. The Contingencies included in the Contract Price is an estimate for use when authorized by the Employer for works and services exceeding the quantities stated in the Bill of Quantities.

- 47. Measurement**
- 47.1 DMA Establishment Works will be measured per DMA completely established by the Contractor and approved by the Project Manager.
 - 47.2 Leakage Reduction and Management Services will be measured in accordance with the methodology described in the SCC.
 - 47.3 System Expansion Works will be measured on the basis on the basis of the agreed work orders and in accordance with the unit of measurement used for product unit price included in the Bill of Quantities.
 - 47.4 Emergency and other Unforeseen Works will be measured on the basis on the basis of the agreed work orders and in accordance with the unit of measurement used for product unit price included in the Bill of Quantities.
- 48. Price Adjustments**
- 48.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the SCC. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type indicated below applies to each Contract currency:

$$P_c = A_c + B_c \text{ Imc/Ioc}$$

where:

P_c is the adjustment factor for the portion of the Contract Price payable in a specific currency "c."

A_c and B_c are coefficients¹ **specified in the SCC**, representing the nonadjustable and adjustable portions, respectively, of the Contract Price payable in that specific currency "c;" and

Imc is the index prevailing at the end of the month being invoiced and Ioc is the index prevailing 28 days before Bid opening for inputs payable; both in the specific currency "c."

¹ The sum of the two coefficients A_c and B_c should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A, for the nonadjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price.

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- 48.3 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.
- 48.4 The index to be used for local currency is specified in the SCC. The indices for foreign currencies shall be proposed by the bidders and will be agreed during contract negotiations.
- 49. Quarterly Statements and Payments**
- 49.1 The Contractor shall submit to the Project Manager quarterly statements in the format indicated in the Technical Specifications of the calculated value of Leakage Reduction and Management Services, DMA Establishment Works, System Expansion Works, and Emergency and other Unforeseen Works in separated items covering the Works and Services for the corresponding quarter.
- 49.2 The Project Manager shall check the Contractor's quarterly statement and certify within fourteen (14) days the amount to be paid to the Contractor.
- 49.3 The value of Services executed shall be certified by the Project Manager taking into account (i) the actual leakage reduction achieved and measured in accordance with the methodology provided in TSP Part C.4 and (ii) all other works as per the items in the Bill of Quantities and the quantities measured and using the prices in the Bill of Quantities.
- 49.4 The value of Works executed shall be certified by the Project Manager taking into account the value of the quantities of products executed and the prices in the Bill of Quantities.
- 49.5 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.
- 50. Payments**
- 50.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager in accordance with GCC Clause 49, within [forty two (42)] days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made. The prevailing rates of interest for [CURRENCY] and the other currencies will be officially obtained from the State Bank of [COUNTRY].
- 50.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute. The interest rate shall be determined as per

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Sub-Clause 50.1.

- 50.3 Unless otherwise stated, all payments and deductions will be paid or charged in the proportions of currencies comprising the Contract Price.
- 50.4 Items of the Works for which no rate or price has been entered in the Bill of Quantities will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract except it is a Variation ordered by the Project Manager (see 50.5).
- 50.5 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Project Manager and before the Variation is ordered. If the work in the Variation corresponds with an item description in the Bill of Quantities the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work. If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.

51. Retention and Reductions

- 51.1 The Employer shall retain the percentage (A) indicated in the SCC from each performance payment due to the Contractor for Leakage Reduction and Management Services.
- 51.2 The regular quarterly fixed fee for Leakage Reduction and Management Services will not be subject to retentions, unless indicated in the SCC.
- 51.3 The Employer shall retain the percentage (B) indicated in the SCC from each payment due to the Contractor for DMA Establishment Works, System Expansion Works and Emergency and other Unforeseen Works.
- 51.4 On completion of the Works and the calculation of the final leakage reduction achieved, the total amount retained for the Leakage Reduction and Management Services (as per Sub-Clause 51.1 of the GCC) shall be repaid to the Contractor.
- 51.5 On completion of the Works, half the total amount retained for DMA Establishment Works, System Expansion Works and Emergency and other Unforeseen Works (as per Sub-Clause 51.3 of the GCC) shall be repaid to the Contractor and the other half after six (6) months have passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor have been corrected before the end of this period.
- 51.6 On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee.

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52. Taxes and Duties

- 52.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Works and Services in and outside of the country where the Site is located.
- 52.2 If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in the country where the Site is located, the Employer shall use its best endeavors to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.
- 52.3 For the purpose of the Contract, it is agreed that the Contract Price specified in the Form of Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date [twenty-eight (28)] days prior to the date of bid submission in the country where the Site is located (hereinafter called "Tax" in this GCC Sub-Clause 52.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of the Contract, which was or will be assessed on the Contractor, Subcontractors or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GCC Clause 37 hereof.

53. Securities

53.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

53.2 Advance Payment Security

53.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the corresponding SCC to the Contract Agreement, and in the same currency or currencies.

53.2.2 The security shall be in the form provided in the bidding documents or in another form acceptable to the Employer. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.

53.3 Performance Security

53.3.1 The Contractor shall, within [twenty-eight (28)] days of the notification of contract award, provide a security for the due

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performance of the Contract in the amount specified in the SCC.

53.3.2 The security shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Employer, and shall be in one of the forms of guarantees provided in the bidding documents, as stipulated by the Employer in the SCC, or in another form acceptable to the Employer.

53.3.3 The security shall automatically be reduced by half on the date of the Substantial Completion and shall become null and void, [eighteen (18)] months after Substantial Completion or [six (6)] months after Taking Over, whichever occurs first, provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GCC Sub-Clause 41.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration.

54. Statement of Completion

54.1 The Contractor shall request the Project Manager to issue a Certificate of Completion for all works and services, and the Project Manager will do so upon deciding that the work is completed.

55. Final Statement

55.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within [fifty-six (56)] days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within [fifty-six (56)] days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.

56. Discharge

56.1 Upon submission of the Final Statement, the Contractor shall give to the Project Manager, a written discharge confirming that the total of the Final Statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment due under the Final Payment Certificate issued pursuant to Sub-Clause 55 has been made and the performance security referred to in Sub-Clause 53.3, if any, has been returned to the Contractor.

57. As Built Drawings and Manuals

57.1 If "as built" Drawings and/or manuals are required, the Contractor shall supply them by the dates stated in the SCC.

57.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the SCC, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount stated in the SCC from payments due to the Contractor.

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57.3 Clause 57.1 and 57.2 also apply to the final report with all its elements as described in TSP Part A.6.

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G. REMEDIES

58. Suspension

58.1 The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefore. The Contractor shall thereupon suspend performance of such obligation (except those obligations necessary for the care or preservation of the Facilities) until ordered in writing to resume such performance by the Project Manager.

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Sub-Clause 63.1, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension as termination of the Contract under GCC Sub-Clause 59.1.

58.2 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Contract, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Sub-Clause 50.1, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice; or
- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site, or failure to obtain any governmental permit under the

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Employer's responsibility and necessary for the execution and/or completion of the Works and Services,

then the Contractor may by fourteen (14) days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

- 58.3 If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GCC Clause 58, then the Time for Completion shall be extended in accordance with GCC Sub-Clause 64, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.
- 58.4 During the period of suspension, the Contractor shall not remove from the Site any Plant and Equipment or any Contractor's Equipment, without the prior written consent of the Employer.

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59. Termination 59.1 Termination for Employer's Convenience

59.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GCC Sub-Clause 59.1.

59.1.2 Upon receipt of the notice of termination under GCC Sub-Clause 59.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Works and Services already executed, or any work required to leave the Site in a clean and safe condition,
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below,
- (c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition.
- (d) In addition, the Contractor, subject to the payment specified in GCC Sub-Clause 59.1.3, shall
 - (i) deliver to the Employer the parts of the Works executed by the Contractor up to the date of termination,
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Works and Services and to the Plant and Equipment as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors
 - (iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

59.1.3 In the event of termination of the Contract under GCC Sub-Clause 59.1.1, the Employer shall pay to the Contractor the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination,
- (b) the costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the Site and in the repatriation of the Contractor's and its Subcontractors'

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personnel,

- (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges,
- (d) the costs incurred by the Contractor in protecting and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 59.1.2,
- (e) the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

59.2 Termination for Contractor's Default

59.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefore to the Contractor, referring to this GCC Sub-Clause 59.2:

- (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt;
- (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 13;
- (c) If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 59 shall apply as if such expulsion had been made under Sub-Clause 59.2 [Termination by Employer].

Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Clause 19.3 [Contractor's Personnel].

For the purposes of this Sub-Clause:

- (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to

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influence improperly the actions of another party;

- (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party

59.2.2 If the Contractor

- (a) has abandoned or repudiated the Contract
- (b) has without valid reason failed to commence work on the Road promptly or has suspended (other than pursuant to GCC Sub-Clause 58.2) the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Employer to proceed,
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause,
- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Works and Services in the manner specified in the program furnished under GCC Clause 17 at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended,

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GCC Sub-Clause 59.2.

59.2.3 Upon receipt of the notice of termination under GCC Sub-Clauses 59.2.1 or 59.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination,

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work

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- required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below,
 - (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination,
 - (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Works and Services and to the Plant and Equipment as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors,
 - (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Works and Services.

59.2.4 The Employer may enter upon the Site, expel the Contractor, and complete the Works and Services itself or by employing any third party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Works and Services for such reasonable period as the Employer considers expedient for the completion of the Works and Services.

Upon completion or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.

59.2.5 Subject to GCC Sub-Clause 59.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Works and Services executed as of the date of termination, the value of any unused or partially used Plant and Equipment on the Site, and the costs, if any, incurred in protecting and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 59.2.3. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

59.2.6 If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined.

If the sum that the Contractor is entitled to be paid, pursuant to GCC

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Sub-Clause 59.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due the Contractor under GCC Sub-Clause 59.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GCC Sub-Clause 59.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

59.3 Termination by Contractor

59.3.1 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to GCC Clause 50, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Sub-Clause 50.2, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or
- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit under the Employer's responsibility and necessary for the execution and/or completion of the Facilities,

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this GCC Sub-Clause 59.3.1, forthwith terminate the Contract.

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- 59.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GCC Sub-Clause 59.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.
- 59.3.3 If the Contract is terminated under GCC Sub-Clauses 59.3.1 or 59.3.2, then the Contractor shall immediately
- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Road already executed, or any work required to leave the Site in a clean and safe condition,
 - (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii),
 - (c) remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractors' personnel from the Site.
 - (d) In addition, the Contractor, subject to the payment specified in GCC Sub-Clause 59.3.4, shall
 - (i) deliver to the Employer the parts of the Road executed by the Contractor up to the date of termination,
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Road and to the Plant and Equipment as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors,
 - (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.
- 59.3.4 If the Contract is terminated under GCC Sub-Clauses 59.3.1 or 59.3.2, the Employer shall pay to the Contractor all payments specified in GCC Sub-Clause 59.1.3, and reasonable compensation for all loss, except for loss of profit, or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.
- 59.3.5 Termination by the Contractor pursuant to this GCC Sub-Clause 59.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GCC Sub-Clause 59.3.

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- 59.4 In this GCC Clause 59, in calculating any monies due from the Employer to the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid pursuant to the Contract.

SAMPLE

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H. CONTINGENCIES

- 60. Contingencies** 60.1 “Contingencies” means a sum included in the Contract and so designated in the Bill of Quantities for use when authorized by the Employer for any additional Quantities of
- 1.) Initial DMA Establishment;
 - 2.) Leakage Reduction and Management Services (further reduction achieved);
 - 3.) System Expansion Works; and
 - 4.) Emergency and Unforeseen Works,
- which sum may be used, in whole or in part, or not at all, on the instructions of the Employer. The Contractor shall be entitled to only such amounts as the Project Manager shall determine in accordance with this Clause.
- 61. Use of Contingencies for Emergency or Unforeseen Works** 61.1 After detecting a situation which in the opinion of the Contractor justifies the execution of Emergency Works or otherwise as defined in GCC Clause 29, the Contractor shall submit a Technical Report to the Project Manager characterizing the situation, estimated quantities and expected costs to correct the emergency and a Lump Sum Price Quotation to correct the emergency. The Price Quotation should be based on the specifications stated in Section VII using the unit prices included in the Bill of Quantities.
- 61.2 If the execution of the Emergency or Unforeseen Works require any activity not priced in the Bill of Quantities, the Contractor will use the price breakdowns included in the Contractor’s Bid in order to form the unit prices of the un-priced items to be included in the Price Quotation of the Emergency or Unforeseen Works, all in accordance with agreed methodology for approving new prices.
- 61.3 Upon receiving the request for Emergency Works including a Price Quotation, the Project Manager may issue a Work Order in accordance with GCC Sub-Clause 29.2 for execution of the Emergency Works for a Lump-Sum amount with a payment Schedule agreed with the Contractor. The cost of these Works will be covered by the amounts included in the Contingencies.
- 62. Use of Contingencies for miscellaneous works and services** 62.1 The use of the Contingencies to cover for miscellaneous works and services will be done under the control and initiative of the Project Manager in accordance with the conditions of the Contract.

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I. CHANGE IN CONTRACT ELEMENTS

63. Change in Assignments to Contractor

63.1 Introducing a Change

63.1.1 If so indicated in the SCC, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Assignments to the Contractor (hereinafter called "Change"), provided that such Change falls within the general scope of the Assignment and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Works and Services and the technical compatibility of the Change envisaged with the nature of the Works and Services as specified in the Contract.

63.1.2 If so indicated in the SCC, the Contractor may from time to time during its performance of the Contract propose to the Employer (with a copy to the Project Manager) any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Works and Services. The Employer may at its discretion approve or reject any Change proposed by the Contractor. The Employer shall however approve any Change proposed by the Contractor in order to ensure the safety of the Works and Services.

63.1.3 Notwithstanding GCC Sub-Clauses 63.1.1 and 63.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

63.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Sub-Clauses 63.2 and 63.3, further details and sample forms are provided in the Sample Forms and Procedures section in the bidding documents.

63.2 Changes Originating from Employer

63.2.1 If the Employer proposes a Change pursuant to GCC Sub-Clause 63.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager, as soon as reasonably practicable, a "Change Proposal," which shall include the following:

- (a) brief description of the Change
- (b) effect on the Time for Completion

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- (c) estimated cost of the Change
- (d) effect on Functional Guarantees (if any)
- (e) effect on any other provisions of the Contract

63.2.2 Prior to preparing and submitting the “Change Proposal,” the Contractor shall submit to the Project Manager an “Estimate for Change Proposal,” which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor’s Estimate for Change Proposal, the Employer shall do one of the following:

- (a) accept the Contractor’s estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal,
- (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate,
- (c) advise the Contractor that the Employer does not intend to proceed with the Change.

63.2.3 Upon receipt of the Employer’s instruction to proceed under GCC Sub-Clause 63.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Sub-Clause 63.2.1.

63.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the parties thereto shall agree on specific rates for the valuation of the Change.

63.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith, and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 63, would be to increase or decrease the Contract Price as originally set forth in the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor’s objection, the Employer shall withdraw the proposed Change and shall notify the Contractor in writing thereof.

The Contractor’s failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

63.2.6 Upon receipt of the Change Proposal, the Employer and the Contractor

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shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GCC Sub-Clause 63.2.2.

63.2.7 If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order."

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

If the parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Adjudicator in accordance with the provisions of GCC Sub-Clause 6.1.

63.3 Changes Originating from Contractor

63.3.1 If the Contractor proposes a Change pursuant to GCC Sub-Clause 63.1.2, the Contractor shall submit to the Project Manager a written "Application for Change Proposal," giving reasons for the proposed Change and including the information specified in GCC Sub-Clause 63.2.1.

Upon receipt of the Application for Change Proposal, the parties shall follow the procedures outlined in GCC Sub-Clauses 63.2.6 and 63.2.7. However, should the Employer choose not to proceed, the Contractor shall not be entitled to recover the costs of preparing the Application for Change Proposal.

64. Extension Time for Completion 64.1 The Time(s) for Completion specified in the SCC shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

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- (a) any Change in the Works and Services as provided in GCC Clause 63,
- (b) any occurrence of Force Majeure as provided in GCC Clause 38 and unforeseen conditions as provided in GCC Clause 36,
- (c) any suspension order given by the Employer under GCC Clause 58,
- (d) any changes in laws and regulations as provided in GCC Clause 37, or
- (e) any default or breach of the Contract by the Employer, or any activity, act or omission of any other Contractors employed by the Employer, or
- (f) any other matter specifically mentioned in the Contract

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

64.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to an Adjudicator, pursuant to GCC Sub-Clause 6.1.

64.3 The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

65. Release from Performance

65.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

66. Contract Extension

66.1 This Clause only applies if the Contract was substantially and successfully completed and the leakage reduction achieved at the end of the contract is higher than the figure specified in the SCC.

66.2 The Employer and the Contractor may negotiate an extension of the Contract to continue with maintenance of leakage levels in the contract area.

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Section V. Special Conditions of Contract (SCC)

Reference to GCC clauses

[1.]	The site is the area of []
[3.]	The following documents are also part of the Contract: [NONE]
[4.]	The language of the Contract is English and the laws governing the Contract are the laws of [COUNTRY].
[5.]	The address of the Employer is: Address: CLIENT, COUNTRY The address of the Contractor is: <i>(insert exact street address, including telephone and fax numbers, and E-Mail address).</i>
[6.1.2]	The Appointing Authority is: the [International Chamber of Commerce, Paris]
[6.2.3]	Arbitration Proceedings shall be conducted in accordance with the rules of procedure for arbitration of the United Nations Commission on International Trade Law (UNCITRAL)
[8.4.1]	The Contractor is obliged to prepare and to furnish to the Project Manager for Approval the following documents: Detailed Designs for (i) Each DMA to be established (ii) System Expansion Works (iii) Emergency and Unforeseen Works if required by the Project Manager
[10.1]	The Contractor shall commence the Services and Works until: [DATE] [28 days after the date of Contract signing]
[10.2]	The Contractor shall complete the Leakage Reduction Phase on: (date of commencement plus 4 years) The Contractor shall complete the Maintenance Phase on: (date of commencement plus 5 years)

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	The Time Schedule for the achievement of DMA Establishment can be found in TSP B 4.
[12.1]	The Contractor is specifically allowed to subcontract the following activities: <ul style="list-style-type: none"> (i) pipe laying and installation of service connection works (ii) leak repair works (iii) road and sidewalk surface reinstatement works
[12.2]	The Contractor may subcontract under his own responsibility and without prior approval of the Employer the following Works and Services provided they do not represent more than [5]% of the contract value: <ul style="list-style-type: none"> (vii) Miscellaneous concrete works (viii) Installation, calibration, commissioning of flow meters and PRVs (ix) Electrical works
[14.2]	The Employer shall give full possession of and access to the Site on: [28 days after the date of Contract signing]
[18.7]	The applicable tariff is: the applicable tariff for industrial customers + fee of environment protection (currently are [AMOUNT AND CURRENCY] per m3 and [AMOUNT AND CURRENCY] per m3 respectively)
[21.]	The Contractor shall carry out the following DMA Establishment Works, which are detailed in the Technical Specifications (Refer to TSP Part B)
[25.2]	The Contractor shall establish a Self Control Quality Unit.
[29.4]	Pressure reducing valves, flow meters, pipe saddles and service connection fittings. All charges towards the inspection by the Project Manager and the Employer's representatives including the cost of return air fares, full board accommodation, local transportation, and all other expenses related to the inspection shall be financed from provisional sum.
[35.1]	The Contractor shall take out and maintain in effect the following insurances in the sums and deductibles shown below: <ul style="list-style-type: none"> (a) The minimum deductible for insurance of the Works and of Plant and Materials is: [AMOUNT AND CURRENCY] (b) The minimum cover for insurance of the Works and of Plant and Materials is: [110]% of the total contract amount

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	<p>(c) The minimum deductible for insurance of other property is: [AMOUNT AND CURRENCY]</p> <p>(d) The minimum cover for insurance of other property is: [AMOUNT AND CURRENCY]</p> <p>(e) The minimum cover for personal injury or death insurance</p> <p style="padding-left: 40px;">(i) for the Contractor's employees is: [AMOUNT AND CURRENCY]</p> <p style="padding-left: 40px;">(ii) and for other people is: [AMOUNT AND CURRENCY]</p> <p>(f) Third Party motor vehicle liability insurance in respect of motor vehicles operated in the Government's country by the Contractor or its Personnel or any Sub-Contractors or their Personnel, with a minimum coverage of equal to [AMOUNT AND CURRENCY] with unlimited number of incidents.</p>
[37.1]	Clause 37.1 is applicable
[39.1]	The Time for Completion of the entire contract is [five] years.
[39.2]	The liquidated damages for the delay of overall contract completion are [0.05]% per day. The maximum amount of liquidated damages for such delay is [10]% of the final Contract Price.
[40.1]	Quarterly numbers of DMAs to be operational see TSP Part B.3
[40.2]	For DMA Establishment Works , the liquidated damages are [10]% per month of delay, of the remuneration normally due if the contractually required number of DMAs had already be established.
[40.3]	<p>TLR_{Q4} [] m3/d</p> <p>TLR_{Q8} [] m3/d</p> <p>TLR_{Q12} [] m3/d</p> <p>TLR_{Q16} [] m3/d</p>
[40.4]	For Leakage Reduction and Management Services , the liquidated damages ² are [AMOUNT AND CURRENCY] per m3/d in case the annual minimum loss reduction target was not achieved even within the 30 days grace period. The volume used for the calculation of the liquidated damages is: TLR_Q (target) - TLR_Q (actual) in m3/day as a one-time payment.

² Note: Liquidated damages were set at [AMOUNT AND CURRENCY] to be approximately equivalent to the difference between CAPEX for the construction of a new water treatment cost of leakage reduction (for 1 m3/d)

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[40.6]	<p>If the 7 day average of the Minimum Night Flow to a DMA has increased by 5 liters per service connection per hour and the Contractor has not taken corrective action in accordance with TSP Part C.4.5 within 7 days after the limit was exceeded. Details see TSP Part C.4.5.</p> <p>For Leakage Reduction and Management Services, the liquidated damages³ are [AMOUNT AND CURRENCY] per m3/h increased night flow for every day until the night flow is reduced</p>
[42.1]	The aggregate liability of the Contractor to the Employer shall not exceed the Contract Amount
[44.1]	The payment of the contract price will be made in the following currencies: <i>[insert]</i>
[45.1]	<p>The amount of the Advance Payment is [10]% of the total Contract Price.</p> <p>The Advance payment will be made by 28 days after the Contract becomes effective.</p>
[45.3]	The Advance payment will be repaid by deductions from the quarterly payments at the rate of [20]% of the amount of each quarterly payment until the repayment of the total amount.
[47.2]	<p>Leakage Reduction and Management Works will be measured on the following basis:</p> <p>Total volume of leakage reduction, to be measured and calculated as per the detailed methodology provided in the TSP Part C 4.</p>
[48.]	<p>The Contract is subject to price adjustment in accordance with GCC Clause 48, and the following information regarding coefficients does apply.</p> <p>The coefficients for adjustment of prices are:</p> <p>(a) For currency [CURRENCY]</p> <p style="margin-left: 40px;">(i) [15] percent non adjustable element (coefficient A).</p> <p style="margin-left: 40px;">(ii) [85] percent adjustable element (coefficient B).</p> <p>(b) For currency <i>[insert name of currency]</i>:</p> <p style="margin-left: 40px;">(i) [15] percent non adjustable element (coefficient A).</p> <p style="margin-left: 40px;">(ii) [85] percent adjustable element (coefficient B).</p>

³ Note: Liquidated damages were set at [AMOUNT AND CURRENCY] to be approximately in the order of CLIENT's marginal water production cost for 24m3/day (= 1m3/h)

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Special Conditions of Contract

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	<p>The Index I for local currency shall be <i>[insert index]</i></p> <p>The Index I for the specified international currency shall be <i>[insert index]</i>.</p> <p><i>[These proxy indices shall be proposed by the Contractor, subject to acceptance by the Employer]</i></p> <p>The Index I for currencies other than the local currency and the specified international currency shall be <i>[insert index]</i>.</p> <p><i>[These proxy indices shall be proposed by the Contractor, subject to acceptance by the Employer.]</i></p>
[51.1]	The retention for Leakage Reduction and Management Services is fixed at [20] percent of the performance component. This percentage is higher than the general retention as per SCC 51.3 because of the risk of the Employer that the Contractor will not be able to maintain the initially achieved savings until the end of the project.
[51.3]	The retention for DMA Establishment Works, System Expansion Works and Emergency and Unforeseen Works is fixed at [5] percent.
[53.2.1]	The amount of the Advance payment security is the same of the advance payment amount.
[53.3.1]	The amount of the Performance Security is [10]%.
[53.3.2]	The form of guarantee is an unconditional Bank Guarantee
[57.1]	<p>The following Drawings and/or Manuals are required at the following dates:</p> <ul style="list-style-type: none"> (i) As-built drawings 14 days after the completion of the respective works (ii) Reports as per TSP A 6.
[57.2]	If the required documents are not supplied in accordance with SCC 57.1, the amount to be withheld is [AMOUNT AND CURRENCY].
[63.1.1]	Employer has the right to propose a change in the contract: Yes
[63.1.2]	Contractor's right to propose a change in the contract: Yes
[66.1]	TLR _{Q16} (actual) > [50,000] m ³ /d

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Technical Specifications

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Section VI. Technical Specifications (TSP)

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Part A: General

1 Basic Concept

The main objective of this contract is to reduce leakage in the contract area in an efficient and sustainable way. The main contract element therefore is "Leakage Reduction and Management Services" which will largely be paid on a performance basis. Activities under this point will traditionally include (but not be limited to):

- leak detection surveys;
- pressure management;
- leak repair on mains;
- replacement of leaking service connections;
- repetition of leak detection surveys, repairs and pressure fine-tuning;
- continuous flow and pressure data logging
- repetition of leak detection and repair should the minimum night flow exceed the tolerance limits;
- detection of illegal connections.

Payments for this element include all activities, services, equipment, civil and installation works as well as the supply of all materials required to achieve the contract objective. The following (non-exhaustive) list provides some examples of costs to be covered under the fixed and performance fee:

- overheads, profits, fixed cost, insurances, taxes, guarantees;
- office establishment and running cost, contractor's yard and warehouse including security;
- staffing cost including all associated cost like social charges, taxes, accommodation, local and international travel;
- communication cost;
- provision of all equipment (ranging from leak detection equipment to excavators and other machinery);
- health and safety precaution related cost;
- cost of permits of all kinds;
- civil works cost such as excavations, leak repair, service connection replacement, road re-instatement;
- supply and installation of leak repair materials and service connection replacement.

The other elements of the contract are the (i) initial establishment of District Meter Areas ("DMA Establishment Works"), (ii) the installation of new connections for new customers inside the contract area ("System Expansion Works") and provisions for (iii) "Emergency and Unforeseen Works" (for example the repair of leaks on trunk mains outside the contract area).

DMAs shall be established in accordance with the DMA outline plan which forms part of this contract but detailed design shall be done by the Contractor and has to be based on detailed investigations (since there might be significant discrepancies between the situation shown on the DMA outline plan and the actual network configuration). As soon as a DMA is established, a baseline inflow and pressure measurement shall be carried out which will later be used to calculate the leakage reduction performance. After leakage in a DMA has been reduced and initial leakage reduction works are completed, the level of leakage in the

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DMA must be maintained until the end of the contract not exceeding limits described in Part C of the Technical Specifications.

The contract duration is [5] years, with a first phase of [4] years for the actual leakage reduction activities (the **Leakage Reduction Phase**) and a [1] year **Maintenance Period** in which the level of savings has to be maintained [Reference: SCC 10.2].

2 Contract Elements

2.1 DMA Establishment Works

[References: TSP Part B, GCC 21, 39.2, 46.2, 47.1, 51.3]

The Contractor shall establish all DMAs shown on the Outline DMA map provided in Section X. The scope of work per DMA includes:

- detailed site investigation and updating of the distribution network drawing;
- verification of suggested DMA boundaries;
- detailed DMA design, including: connecting mains to be laid, boundaries valves, DMA inflow chamber, pressure reducing valve arrangement and specifications just to mention the most important activities; detailed design shall be submitted to the Project Manager for approval;
- execution of all required civil and installation works, complete with the supply of all required pipes, materials, fittings and equipment as per the specifications;
- installation of pressure and flow data logger, setting up of data transfer to Contractor's office and Client's office (GSM data transfer);
- execution of zero-pressure-test; and
- preparation of as-built drawings.

After the successful execution of the above the actual leakage reduction activities in the DMA can start. The bidder has to submit a time schedule for DMA establishment which is in accordance with the deadlines given in Part B.4 of the Technical Specifications.

2.2 Leakage Reduction and Management Services

[References: TSP Part C, GCC 22, 39.2, 46.3, 47.2, 51.1]

Leakage Reduction and Management Services are the core element of this contract. The Contractor has to take all necessary action, provide all required services and materials and carry out all works required to achieve the objective of the contract and reduce leakage in the contract area. The following (non-exhaustive) list summarizes the activities the Contractor is normally expected to carry out:

- baseline 7-day inflow and pressure measurement prior to starting any activities;
- leak detection surveys (using all kind of equipment and technologies, from simple sounding with a listening stick to leak noise correlators and leak noise loggers as appropriate);

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- pressure management: stabilizing, managing and reducing average DMA pressure using PRVs and controllers and various techniques as appropriate;
- leak repair: repair of leaks on mains and replacement of leaking service connections;
- final 7-day inflow and pressure measurement after the leakage reduction activities have been successful concluded; and
- continuous monitoring of DMA inflow, pressure and minimum night flow and execution of leak detection and repair should the tolerance limits be exceeded (see Part C.5 of the Technical Specifications).
- illegal connections shall be detected and reported to the Employer.

2.3 System Expansion Works

[References: TSP Part D, GCC 23, 27, 39.2, 46.4, 47.3, 51.3]

System Expansion Works include the installation of service connections to new customers inside the DMA. In some cases this might also require the extension of a distribution main inside the DMA so that new customers can be connected in the most effective way.

System expansion works shall be suggested by the Contractor and carried out only after approval from the Project Manager.

2.4 Emergency and Unforeseen Works

[References: TSP Part E, GCC 24, 27, 39.2, 46.5, 47.4, 51.3]

The contract offers a provision for Emergency and Unforeseen Works. These would typically include (non-exhaustive list):

- leak repairs on trunk mains and distribution mains close to but outside of the DMAs included in this contract
- valve repair, replacement or installation in new location on trunk and distribution mains outside of the DMAs
- repair or installation of fire hydrants
- replacement of distribution mains and associated service connections inside the DMAs

Should the Contractor see advantages of replacing a distribution main within a DMA, for example if the burst frequency is too high and frequent leak repairs are not sufficient to achieve sustainable leakage reduction in a DMA, the Contractor may suggest the replacement of such pipeline. Should a pipeline be replaced in a DMA, leakage reduction achieved as a result of the replacement will not be eligible for the m3 performance payment and therefore leakage assessment measurements for the DMA have to be carried out before and after pipeline replacement.

Works carried out under this category must only be carried out if approved/ordered by the Project Manager.

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3 Self-Control Unit of the Contractor

[References: GCC 25.2 - 25.4]

The Contractor is obliged to establish, within his own organizational structure, a specific Unit staffed with qualified personnel, whose task is to verify continuously the leakage levels in the DMAs in general and loss reduction achievements in particular. That Unit will also be responsible for the generation and presentation of the information needed by the Contractor for the documentation required for the Quarterly Statement. In general terms, the Unit will be responsible to maintain at all times a detailed and complete knowledge of leakage levels in all DMAs included in the contract and to provide to the management of the Contractor all the information needed in order to efficiently manage the DMAs and maintain the achieved leakage levels. The Self-control Unit is also obliged to carry out, in close collaboration with the Project Manager, all DMA baseline measurements as well as all other inflow and pressure measurement contractually required.

The compliance (or non-compliance) of the Contractor will be reported by the Self-control Unit to the Project Manager in the form of tables. The mandatory standard format table will be provided by the Project Manager. The tables are part of the Contractor's quarterly statement, and they may be complemented by comments for which a specific format is not required.

4 Distribution Network Drawings

The Employer will provide the contractor with the all AutoCAD files (not the AutoCAD software) of the distribution network of the Contract Area. This will also include digital versions of the drawings that form part of the contract.

In COUNTRY Distribution Network Drawings are considered to consist of information of national security relevance. The Contractor therefore has to ensure that the distribution network drawings are only used for the purposes of the Contract and are not given to third parties.

5 Reporting

[Reference: GCC 17.3, 57]

Each quarterly statement of the Contractor shall be accompanied with a progress report, comprising of the standard tables explained above, a summary of all works carried out during the last quarter, a work program for the quarter ahead and all other information that might be requested by the Project Manager. The form of the quarterly report is to be agreed with the Project Manager.

At the end of the Maintenance Period the Contractor shall submit a Project Completion Report that provides the following information:

- final performance fee calculations
- summary tables of system expansion and unforeseen works
- summary tables of number and types of leaks detected and repaired
- updated distribution network drawings (both hardcopy and AutoCAD files) of all DMAs
- as-built drawings for all main pipes installed and chambers constructed
- table with target and intervention minimum night flow for all DMAs

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- DMA data management guidelines
- pressure management guidelines that include maintenance recommendations and (if any) specific information for each PRV
- descriptive summary of works carried out and problems encountered
- the medium term asset management strategy for the contract area as per TSP Part F.1
- recommendations for possible future water loss reduction contracts in CLIENT

6 Hydraulic Modeling

A hydraulic model (Water CAD, established 2005) is available with the Employer. Should the Contractor need to hydraulically simulate network changes or the influence of DMA boundaries, he shall submit a request to the Project Manager. Hydraulic simulations will then be done by CLIENT or their Consultant but not the Contractor. Hydraulic modeling results shall be provided to the contractor free of charge.

7 Minimum Key-Personnel Requirements

[Reference: ITB 13.2(vi), 29.1(c), GCC 19.1]

In general, staffing levels and qualifications are to be decided by the Contractor. However, in order to make bids comparable, the following minimum number of experienced key-personnel has to be available. The number of man-months for each position is to be understood as the absolute minimum requirement.

Evidence of the physical presence of these listed staff members have to be provided in the quarterly progress reports. It has to be understood that it might be necessary to bring *significantly more specialists* to the site in order to achieve the objectives of the contract. All cost of such additional personnel has to be included in the contract price.

Position ⁴	Minimum Experience Requirements	Minimum number of man-months
Leakage Manager	<ul style="list-style-type: none"> ➤ 15 years experience with water distribution networks ➤ Technical University degree, for example Water and Sanitary Engineering, Civil Engineering or Mechanical Engineering ➤ 10 years of developing county experience ➤ 5 years experience with leakage reduction in major projects 	[50]
DMA and Pressure Management Specialist(s)	<ul style="list-style-type: none"> ➤ 5 years experience with leakage reduction projects, particularly with pressure reducing valves, controllers, data loggers and similar 	Total of [60]

⁴ Note: The Employer has waived the condition of the Prequalification documents that only the same key staff must be used in the bid. Bidders are free to use alternative staff as long as the Minimum Experience Requirements are PRECISELY met and all suggested key staff signs a written declaration to be available and ready to accept the job as per the Staffing Schedule.

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	➤ 2 years developing country experience	
Leak Detection Specialist(s)	<ul style="list-style-type: none"> ➤ 10 years hands-on leak detection experience ➤ 5 years developing country experience 	Total of [60]
Design Engineer/Quality Control	<ul style="list-style-type: none"> ➤ 5 years experience with design of DMAs and water network installations ➤ Technical University degree, Water and Sanitary or Civil Engineering 	[12]

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8 Responsibility Assignment Matrix

The following Matrix presents in a simplified manner the some of the critical rights and responsibilities of the Contractor, the Employer and the Project Manager:

Description	Contractor	Employer	Project Manager
Leak detection and repair works inside the DMAs of the contract area	To be done by the contractor as soon as a DMA is established and the baseline measurement carried out. Leak repair to be done irrespectively whether leak was detected by the contractor's staff or reported by third party.	Except for emergency repairs, the Employer shall not carry out any leak detection and repair activities inside the future or already established DMAs.	
Leak repair on trunk mains inside the contract area but outside of the DMAs	Not the responsibility of the Contractor but might be ordered and separately paid using the provisions in the BoQ.	Duty of the Employer.	
24h stand-by repair groups	The contractor is not obliged to provide 24h stand-by repair services	Duty of the Employer.	
Operation of DMA boundary valves or PRVs	Exclusively to be done by the Contractor.	Only in Emergency situations (e.g. fire fighting) the Employer may operate DMA boundary valves.	
Upstream Pressure and Supply Continuity		The Employer shall supply the contract area on a continuous basis (except in emergencies) – or at least no worse a supply situation than prevailed at the time of award of contract.	
Supply Interruptions	The Contractor is allowed to interrupt supply to customers if and when required but has to follow the same requirements as the Employer (e.g. informing the concerned customers).		
Approval of quarterly statements			Approval of quarterly statements shall be done by the Project Manager.
Payment of quarterly statements		The Employer shall pay the amounts approved by the Project Manager. Should there be disputes, payments shall not be withheld and the required corrections shall be made with one of the next quarterly payments.	
Work Orders			Work Orders shall be issued by the Project Manager.

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9 Format for Quarterly Statement

[Reference: GCC 49.1]

The Quarterly Statements shall have the following format:

The format of the Quarterly Statement will be provided by the Project Manager.

10 Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the materials, Plant, and other supplies to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure substantial equivalence to the standards and codes specified will be accepted subject to the Project Manager's prior review and written approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the Contractor and submitted to the Project Manager at least 28 days prior to the date when the Contractor desires the Project Manager's approval. In the event the Project Manager determines that such proposed deviations do not ensure substantially equal performance, the Contractor shall comply with the standards specified in the documents.

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Part B: DMA Establishment Works

1 Scope of Work

[References: GCC 21, 36.5, 39.2, 46.2, 47.1, 51.3]

1.1 Scope of general DMA planning Works

A main objective of this contract is the establishment of about [] DMAs. The DMA outline design and the DMA list below show [] DMAs with between (approximately) [] and [] service connections each. The Contractor shall review the DMA outline plan and suggest changes if necessary, i.e. if he wants to merge two small DMAs or split a too large DMA and discuss these suggestions with the Project Manager. The contractor shall then submit a revised DMA outline plan to the Project Manager for approval. The DMAs to be established shall cover the entire contract area but the final number of DMAs will be only be established after the new outline DMA plan is available. The new outline DMA map shall be submitted as early as possible but latest 6 months after the contract start date.

1.2 Scope of Work for each DMA

The scope of work includes (but is not limited to)

- detailed site investigations, updating of distribution network drawings, complete with all trial holes that might be required to verify pipe connections (and the consequent re-instatement of road, sidewalk or any other surface);
- verification of suggested DMA boundaries; locating of existing boundary valves, functioning and tightness checks of existing boundary valves, identification of location for additional boundary valves to be installed, identification of locations where the pipes will be disconnected and capped).
- selection of location for DMA inflow chamber;
- identification of customer service connections that have to be re-located from a trunk or distribution main outside the DMA (or in a neighboring DMA) to a distribution main inside the DMA.
- site survey for DMA inflow chamber location and location of underground assets
- detailed design of:
 - all pipelines that have to be laid
 - location and installation details of new boundaries valves
 - DMA inflow chamber, complete with bypass and valve arrangements, connection to main outside and inside the DMA, all pipework and structural design, pressure reducing valve specifications
 - standard design and map with location of all customer connections to be relocated
 - all other civil, mechanical, installation or plumbing works that might be required
- submission of the complete detailed design to the Project Manager for approval;

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- construction of inflow chamber, complete with the installation of all pipework, bypass, valves, flow meter and strainer and pressure reducing valve; including supply of all required pipes, materials, fittings and equipment, as per the specifications; note that PRVs shall be installed even if they will not be commissioned yet because of low pressure problems.
- execution of all other civil, mechanical, installation or plumbing works, including supply of all required pipes, materials, fittings and equipment required for DMA establishment, as per the specifications; this include laying of main pipelines up to a cumulated length of [20] m.
- for all works carried out: reinstatement of road and sidewalk surface
- supply and installation of dual channel pressure and flow data logger at the inflow point, setting up of data transfer to Contractor's office and Client's office (GSM data transfer); supply and installation of respective software
- execution of zero-pressure-test and execution of all subsequent investigations and works should the first zero-pressure-test have failed until the test is successfully performed.
- commissioning of PRV and controller
- preparation of as-built drawings for all works executed, including those described below, updating of the AutoCAD maps that were provided by the Employer.

In many DMAs it will be necessary to modify or reinforce the distribution network and install additional distribution mains (e.g. network reinforcement for hydraulic considerations, changed network configuration, connecting the DMA to a trunk main,). In such cases (and where the length of mains exceed the 20m included in the DMA set-up unit rate) item 1.2 of the BoQ shall be used and includes the following

- laying of additional length of distribution mains exceeding the initial [20]m length included in item 1.1.; Supply and installation of uPVC pipelines or ductile iron pipelines (depending on the diameter) and all fittings, including connection to the network, up to [2] m depth, including detailed design, removal and disposal of old pipes, sand bedding, testing and disinfection, re-instatement of road, sidewalk or any other surface.

Often it will also be necessary to re-locate customer service connections from mains outside the DMA to a pipeline inside the DMA. In such cases Item 1.3 will be used for the disconnection of the old connection and the installation and of a new service connection. The scope of work for this item includes

- Disconnection of service connections from DMA customers supplied from a main outside the DMA, disconnection at the customer metering point and the pipe saddle, replacement of pipe saddle with repair clamp, installation of new HDPE service connection from metering point to new connecting point inside the DMA, complete with sand bedding, re-instatement of road, sidewalk or any other surface, including the supply of all materials.

Multiple feed DMAs are in principle to be avoided and the present DMA outline design does not include any multiple feed DMA. However, The Contractor may find situations where for hydraulic or other reasons it is advisable to establish multiple feed DMAs. If approved by the Project Manager, Item 1.1.2 will be used to pay for an additional DMA inflow chamber.

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2 Items in the Bill of Quantities

[References: BoQ in Section VIII, GCC 21, 44.2(a), 46.2, 47.1]

The Bill of Quantities for DMA Establishment Works consists of three items:

- 2.1 Lump-sum price per DMA established
- 2.2 Extra Over (EO) for mains and inflow chamber
- 2.3 Extra Over (EO) for customer service connections

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3 List of DMAs

The following list shows the DMAs that have to be established according to the outline DMA design. It has to be highlighted that this design is only preliminary and that the actual situation might differ substantially. It will be up to the Contractor to continuously update this list and submit to the Project Manager.

List of DMAs according to the outline DMA design

No.	Code of DMA	Location description	Approximate number of customers

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4 Time Schedule

[References: GCC 10.2, 17.2, 40.1, 40.2]

This time schedule for DMA establishment completion is the contractual minimum requirement based on the assumed number of [] DMAs.

In the beginning of the Contract the Contractor has to submit his Program of Performance and might of course suggest a modified, more ambitious, DMA establishment schedule.

Should the number of DMAs change in the course of the project, the Contractor shall submit updated versions of the Program of Performance (respectively the DMA establishment time schedule) to the Project Manager for approval.

Contract Quarter	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cumulated number of DMAs established																

The figures per quarter indicate the cumulative number of DMAs that have to be operational (accepted by the Project Manager) before the end of the respective quarter.

If, these targets, for reasons attributable to the Contractor, are not met, and no sufficiently successful corrective action has been taken to at least achieve them within a 90 days grace period, liquidated damages will apply.

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Part C: Leakage Reduction and Management Services

1 Scope of Work

[References: GCC 22]

The Contractor has to take all necessary action, provide all required services and materials and equipment and carry out all works required to achieve the objective of the contract and reduce leakage in the contract area. The following (non-exhaustive) list summarizes the activities the Contractor is normally expected to carry out (without limiting the Contractor's obligations and the scope of work):

- leakage reduction will be done inside the DMAs established under this contract. No leakage reduction works shall be carried out prior to the 7-day inflow and pressure measurement baseline measurement to be carried out by the Contractor, jointly with and supervised by the Project Manager;
- leak detection surveys (using all kind of equipment and technologies, from simple sounding with a listening stick to leak noise correlators and leak noise loggers as appropriate), note that all required leak detection equipment has to be provided by the Contractor (but will not revert to the Employer at the end of the Contract).
- pressure management: stabilizing, managing and reducing average DMA pressure using PRVs and controllers and various techniques as appropriate; when doing pressure reduction, the Contractor has to ensure that all customers in the DMA are still sufficiently supplied. Level of minimum pressure will depend on the type of housing and the general availability of tanks. Pressure management has to be done in close co-operation with the customers in the DMA to reduce the risk of complaints. All required customer information and education is part of the Contractor's duties and cost for these activities is included in Item 2.
- leak repair on mains shall be done by any appropriate methodology, for example by installing repair clamps or replacing pipe sections, all material supply, installation and road re-instatement works are included.
- replacement of leaking service connection: if a leak is found on any part of the service connection, the entire connection including the pipe saddle shall be replaced
- leak detection surveys, repairs and pressure fine-tuning shall be repeated and/or shall continue until an acceptable level of leakage is achieved. The acceptable level of leakage might vary from one DMA to the other, it is up to the Contractor to decide at which point the effort for further leakage reductions becomes prohibitively high;
- continuous flow and pressure data logging, transfer to his and the Employers office by GSM technology, leakage modeling for all operational DMAs on a quarterly basis for the calculation of the performance payments
- establishment of the Target Night Flow Level (TNFL) in m³/h after completion of all leakage reduction activities in a DMA and continuous monitoring of inflow, pressure and minimum night flow to become aware of new leaks; and

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- repeating of leak detection and repair should the minimum night flow exceed the tolerance limits (see Part C.4.5).
- detecting illegal connections: Should the Contractor find illegal connections in a DMA he shall report this connection to the Employer.

The fixed and performance fee combined cover all fixed cost, overheads, profit and all manpower, machinery, equipment, transport as well as all materials and works required to carry out all activities that might become necessary to achieve the objective of the contract. The fee per detected illegal connections (50% of the unit performance fee (i.e. 1 m³/day) for leakage reduction) covers all cost for the detection and the reporting of illegal connections.

2 Items in the Bill of Quantities

[References: BoQ in Section VIII, GCC 22, 44.2(b), 46.3, 46.6, 47.2]

The Bill of Quantities for the Leakage Reduction and Management Services consists of three items only

- 3.1 Quarterly Fixed-fee
- 3.2 Performance fee per volume (m³/d) of leakage reduction
- 3.3 Performance fee per illegal connection detected

3 Leakage Reduction and Management Services Area

The Leakage Reduction and Management Services Area can be seen on Drawing B-02 in Section X - Drawings. It includes all DMAs established under this contract.

4 Performance Measurement and Monitoring

[References: GCC 46.3, 46.6, 47.2]

Performance achievement of the Contractor will be measured in volumetric terms - the reduction of real losses (leakage) in the DMAs measured in m³ per day.

A baseline measurement, to be carried out after DMA establishment and prior to any leakage reduction activities, will serve as the basis for the loss reduction assessment (see 4.1)

Each baseline measurement shall be carried out in accordance with the procedure outlines below. In addition to this baseline measurement, an analysis using the methodology described under 4.2 shall be carried out and shall be calibrated using the baseline measurement done in accordance with the method described in 4.1.

4.1 The baseline measurement

The measurement will be done using the $Q_I - Q_M$ method: Q_I stands for DMA inflow and Q_M for the metered consumption in the DMA (based on meter reading of all customer meters). The procedure in detail:

1. CLIENT shall have the opportunity to identify all customer meters that are likely to under-register (for example suspiciously low monthly customer consumption) and replace them before the

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baseline measurement. The Project manager shall suggest a reasonable time frame for the change-out program.

2. Carry out a 7 day DMA inflow measurement. Flow meter data to be logged with an electronic pressure logger using 5 minutes logging intervals.
3. Calculate the average daily DMA inflow: Q_I (m³/d).
4. During the same period, carry out DMA average pressure measurement, pressure data to be logged with an electronic pressure logger using 5 minutes logging intervals. In the case of small DMAs the inflow pressure is considered to be at a similar level than the average zone pressure. In case of larger DMAs, the Project Manager might order the execution of a pressure measurement at the average pressure location of the DMA.
5. Calculate the average baseline pressure over the 7 day period P_B (m)
6. Read all customer meters on day 1 and 7 of the measurement. First and second reading of a specific meter should be at approximately the same hour of the day.
7. Calculate the total metered consumption of all customers in the DMA and calculate the daily average Q_M (m³/d). In cases where the customer meter was inaccessible during the visit of the meter reader, use a three-month average of billed consumption to calculate the average daily consumption.
8. Calculate baseline leakage: $L_B = Q_I - Q_M$ (m³/d)

4.2 The Leakage Model

The leakage model has to be established together with the baseline measurement described under 4.1 - which will also use as a help to calibrate the leakage model.

The procedure in detail:

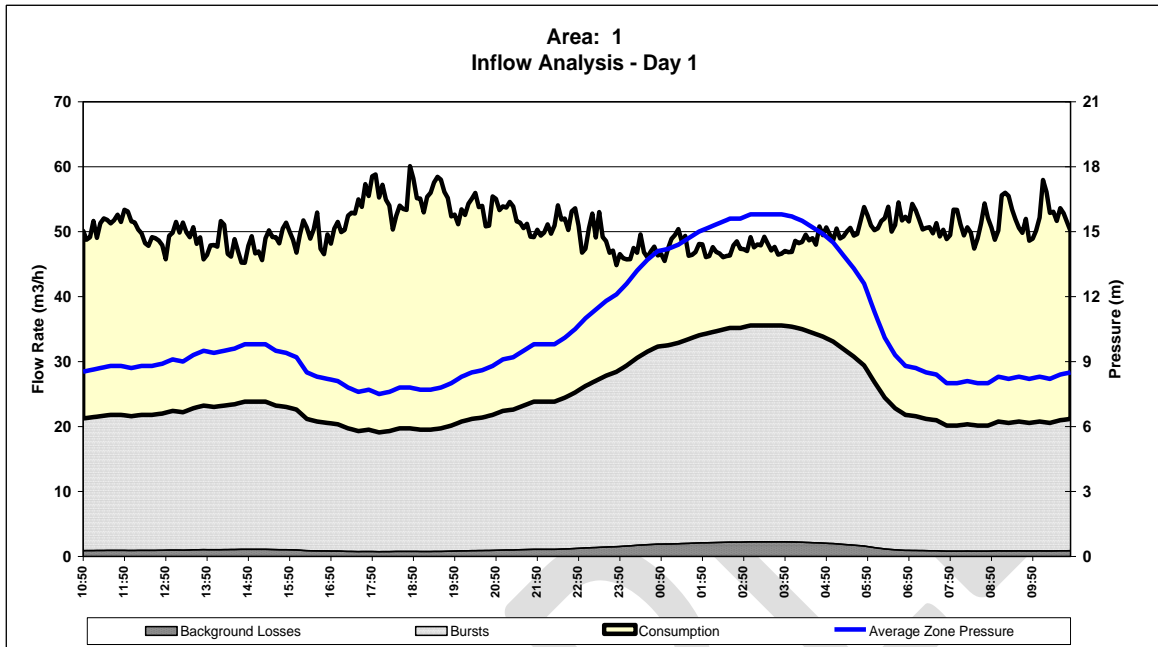
1. Use flow and pressure data of the baseline measurement
2. Calculate the average daily DMA inflow: Q_I (m³/d).
3. Establish average minimum night flow, estimate minimum night consumption and calculate net night flow (= night time leakage). Monitor night consumption of large commercial, industrial or institutional customers with unusual diurnal consumption profiles and take results into account when estimating minimum night consumption.
4. Use night time leakage, pressure data and the applicable pressure: leakage relationship to simulate leakage (see chart below) over the 7 day period and calculate daily average (Baseline) leakage, L_B (m³/d).
5. Compare results to baseline measurement and calibrate the leakage model and re-calculate daily average (Baseline) leakage, L_B (m³/d).

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4.3 Quarterly Leakage Level Assessment

For the calculation of the quarterly leakage reduction achievement, the leakage models of all DMAs that have already been baselined will be updated.

The procedure in detail:

1. Carry out a 48 hour DMA inflow measurement. Flow meter data to be logged with an electronic pressure logger using 5 minutes logging intervals.
2. Calculate the average daily DMA inflow: Q (m³/d).
3. During the same period, carry out DMA average pressure measurement, pressure data to be logged with an electronic pressure logger using 5 minutes logging intervals. The pressure measurement has to be taken in the same location as for the baseline measurement.
4. Calculate the average pressure P_F (m)
5. Monitor night consumption of large commercial, industrial or institutional customers with unusual diurnal consumption profiles and correct minimum night flow if required. Also correct minimum night consumption if number of customers in the DMA has substantially changed.
6. Calculate daily average leakage for the respective Quarter, L_Q, in (m³/d).

4.4 Calculation of leakage reduction achievement

After having the results from the baseline and the quarterly measurements of all DMAs already baselined available, the achieved volume of leakage reduction (LR) for all DMAs where the average pressure during baseline measurement was higher than or equal to the pressure observed during the quarterly measurement (P_B > P_Q) can simply be calculated:

$$LR = L_B - L_Q \text{ (m}^3\text{/d)}$$

In cases where the average DMA pressure during the quarterly measurement is more than 1 m higher than it was during the baseline measurement, a special method of calculating the loss reduction achievement shall be applied⁵:

1. express baseline leakage (L_B) in l/conn/d per m pressure (using average baseline pressure P_B and number of service connections), e.g.:

$$700 \text{ l/conn/d at 7 m pressure} = 100 \text{ l/conn/d/m}$$

2. express quarterly leakage (L_Q) in l/conn/d per m pressure (using average quarterly pressure P_Q and number of service connections), e.g.:

$$600 \text{ l/conn/d at 10 m pressure} = 60 \text{ l/conn/d/m}$$

⁵ It has to be understood that leakage increases proportionally to pressure and thus the contractor's achievement can not be the actual leakage reduction (leakage could after leak detection and repair be even higher than before).

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3. calculate leakage reduction target achievement (e.g. if DMA has 1,000 connections):

$$(100 - 60 = 40 \text{ [l/conn/d/m]}) \times ((7+10)/2=8.5 \text{ [m]}) = 340 \text{ [l/conn/d]}$$

$$\text{LR} = 340 \text{ [l/conn/d]} \times 1,000 = \mathbf{340 \text{ (m}^3\text{/d)}}$$

The cumulated leakage reduction achieved up to the end of the respective quarter is the total of the leakage reduction achieved in all DMAs, for example:

Total leakage reduction by the end of Quarter 5 (TLR_{Q5}) for DMAs 1 - 6 =

$$\text{TLR}_{Q5} = \text{LR}_{Q5(1)} + \text{LR}_{Q5(2)} + \text{LR}_{Q5(3)} + \text{LR}_{Q5(4)} + \text{LR}_{Q5(5)} + \text{LR}_{Q5(6)}$$

The quarterly leakage reduction is the difference between the total leakage reduction calculated at the end of the present quarter minus the total leakage reduction calculated at the end of the previous quarter, for example:

$$\text{TLR}_{Q4} = \text{LR}_{Q4(1)} + \text{LR}_{Q4(2)} + \text{LR}_{Q4(3)} + \text{LR}_{Q4(4)}$$

and

$$\text{TLR}_{Q5} = \text{LR}_{Q5(1)} + \text{LR}_{Q5(2)} + \text{LR}_{Q5(3)} + \text{LR}_{Q5(4)} + \text{LR}_{Q5(5)} + \text{LR}_{Q5(6)}$$

result in a Total Quarterly Leakage Reduction achieved in Quarter 5:

$$\text{TQLR}_{(5)} = \text{TLR}_{Q5} - \text{TLR}_{Q4}$$

4.5 Leakage Level Maintenance

[References: GCC 40.5, 40.6]

The Contractor shall maintain the level of leakage in a DMA at the level achieved after the completion of all leakage reduction activities in this DMA (or below that if further reductions are possible at a later time). The indicator used to monitor any possible increase of leakage is the minimum night flow.

After completion of all leakage reduction activities in a DMA the Contractor shall establish the Target Night Flow Level (TNFL) in m³/h for this DMA and submit this information to the Project Manager.

If the 7 day average of the minimum night flow (MNF) to a DMA increases by 5 liters per service connection per hour (= for a DMA with 1,000 connection this would mean by 5 m³/h) above the Target Night Flow Level (TNFL) the Contractor shall

- investigate whether there is any new, additional night consumption and if this is the case inform the Project Manager who will establish a revised TNFL
- if the night flow increase is caused by an unwanted pressure increase re-adjust the PRV to reduce night pressure to previous levels
- if the night flow increase is caused by a wanted pressure increase or by increased night consumption inform the Project Manager who will establish a revised TNFL

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- else carry out leak detection and repair activities to reduce the MNF again to an acceptable level - preferably a level not exceeding the TNFL.

If the 7 day average of the Minimum Night Flow to a DMA has increased by 5 liters per service connection per hour and the Contractor has not started to take corrective action in accordance with TSP Part C.4.5 within 7 days after the limit was exceeded liquidated damages will apply. Such liquidated damages will be calculated per m³/h increased night flow for every day (starting 14 days after the limit was exceeded) until the night flow is again reduced accordingly, at least below the limit of +5 liters per service connection per day above TNFL.

4.6 Establishment of Final Leakage Reduction Achievement

At the end of the Contract (end of year 5, Maintenance Period) the Final Leakage Reduction Achievement shall be calculated. For this purpose, Completion Measurements following the methodology of the baseline measurements (see 4.1)⁶ have to be carried out.

The Final Leakage Reduction (FLR) in each DMA will be calculated

$$FLR(m^3/d) = L_B \text{ (Leakage at Baseline Measurement)} - L_C \text{ (Leakage at Completion Measurement)}$$

In cases where the average DMA pressure during the Completion Measurement is more than 1 m higher than it was during the baseline measurement, the method described under 4.4 shall be used to calculate the Final Loss Reduction achievement in the respective DMA.

The Final Contract Achievement (FCA) is the sum of the final leakage reduction achieved in all DMAs.

$$FCA (m^3/d) = FLR_1 + FLR_2 + FLR_3 + FLR_4 + FLR_5 + FLR_6 + \dots \dots \dots FLR_{119}$$

The Final Contract Achievement (FCA) shall be used to calculate the final figure for the Contractor's performance fee.

4.7 Adjustments in the event of emergency or unforeseen works within a DMA

Should the Project Manager order the replacement of distribution mains (and associated service pipes) within a DMA as part of the Emergency and Other Unforeseen works, then revised baseline measurements will be undertaken before and after completion of these works so that their effect on physical losses within the DMA can be removed from the performance payments to be made under the contract.

5 Time Schedule - Minimum Leakage Reduction Targets

[References: GCC 10.2, 17.2, 40.3, 40.4]

In general, the progress of leakage reduction will largely depend on DMA establishment progress and of course on the Contractor's efforts and techniques used. In general, it is up to the Contractor how much to reduce leakage⁷.

⁶ Should illegal connections that have been turned into metered connections in the course of the project, these meters must not be read to make the results comparable to the baseline measurement.

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But in order to safeguard the interest of the Employer, the following annual minimum leakage reduction targets apply (TLR_Q = Total Leakage Reduction per the end of the respective quarter in m³/day):

TLR_{Q4}	2,000 m ³ /d
TLR_{Q8}	10,000 m ³ /d
TLR_{Q12}	20,000 m ³ /d
TLR_{Q16}	37,500 m ³ /d

If these annual leakage reduction targets were not achieved even within a 30 days grace period, liquidated damages will apply. The volume used for the calculation of the liquidated damages is: TLR_Q (target) - TLR_Q (actual) in m³/day as a one-time payment.

⁷ It is again highlighted that the amount of 75,000 m³/d used in the Bill of Quantities is NOT a target.

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Part D: System Expansion Works

1 Scope of Work

[References: GCC 23]

It is expected that in many (if not all) DMAs a few properties can be found that do not yet have a water supply connection. It is of course in the interest of the Employer, that such properties would apply for an account and would get connected. In such cases, it would be the duty of the Contractor to install such new connections and, if necessary, lay additional distribution mains.

The scope of work includes (but is not limited to)

- Laying of additional main pipes required to connect new customers; applicable should in a part of the DMA several new customers apply for connections but no main pipe exists in the respective street. The scope includes:
 - Supply and installation of uPVC or Ductile Iron pipelines and all fittings, including connection to the network, including detailed design, sand bedding, testing and disinfection, re-instatement of road, sidewalk or any other surface.
- Installation for additionally required valves inside the DMA that might be required when a pipeline under item 3.1 is laid or when the number and location of existing valves is inappropriate for leakage location purposes (e.g. step-testing). The scope includes:
 - Detailed design, supply and installation of sluice valves, complete with connection to the existing distribution network, complete with all fittings and materials required, including re-instatement of road and sidewalk surface.
- Installation of service connections for new customers to (previously) existing mains or to mains laid under item 3.1. The scope of the item includes:
 - Detailed design, supply and installation of customer service connections for new customers, from (and including) the pipe saddle to the point of customer meter installation, complete with all fittings and materials required, including re-instatement of road and sidewalk surface.

2 Items in the Bill of Quantities

[References: BoQ in Section VIII, GCC 23, 44.2(c), 46.4, 47.3]

The Bill of Quantities for System Expansion Works consists of three items:

- 4.1 Laying of additional main pipes required to connect new customers
- 4.2 Installation of additionally required valves inside the DMA
- 4.3 Installation of service connections for new customers

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3 Planning and Approval

[References: GCC 23.2, 46.4]

On the basis of a request from the Employer or based on the Contractor's own observations in the DMA, the Contractor shall prepare a map with the location of new customers and the suggested pipeline and/or service connection installation and submit to the Project Manager for discussion with the Employer. If the need for system expansion works is confirmed, the Project Manager will instruct the Contractor to prepare detailed design for the respective works. The detailed design shall be submitted to the Project Manager for approval. Based on the approved detailed design, the Project Manager will issue a work order to the Contractor.

SAMPLE

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Part E: Emergency and other Unforeseen Works including Selective Infrastructure Replacement

1 Scope of Work

[References: GCC 24]

Emergency and Unforeseen Works are leak repair works outside the DMAs established under this contract or other plumbing, repair, installation or maintenance works that the Employer might want the Contractor to carry out. These would typically include leak repairs on trunk mains and distribution mains close to but outside of the DMAs included in this contract. The standard items in the Bill of Quantities cover the following scope of works (and other works might be calculated using elements of the daywork schedule):

- Supply and installation of uPVC or Ductile Iron pipelines and all fittings, including connection to the network, including detailed design, sand bedding, testing and disinfection, re-instatement of road, sidewalk or any other surface.
- Detailed design, supply and installation of sluice valves, complete with connection to the existing distribution network, complete with all fittings and materials required, including re-instatement of road and sidewalk surface.
- Disconnection, supply and installation of service connections for customers that were connected to replaced mains, installation of new HDPE service connection from (and including) the pipe saddle to metering point, complete with sand bedding, re-instatement of road, sidewalk or any other surface, including supply of all materials.
- Supply and installation of Fire Hydrant complete with connection to existing main, including all fittings and T-connection, re-instatement of road, sidewalk or any other surface, on main diameter:
- Leak repair on distribution or transmission mains outside the DMAs included in this contract, supply and installation complete with re-instatement of road, sidewalk or any other surface.
- Supply and installation of air valve on main pipe with diameter

Wherever needed, these items also include the preparation of detailed design.

2 Items in the Bill of Quantities

[References: BoQ in Section VIII, GCC 24, 44.2(d), 46.5]

The Bill of Quantities for System Expansion Works consists of six items:

- 5.1 Supply and Installation of main pipelines
- 5.2 Supply and Installation of sluice valves
- 5.3 Supply and Installation of Fire Hydrant
- 5.4 Supply and Installation of customer service connections

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5.5 Leak repair on distribution or transmission mains outside the DMAs

5.6 Installation of air valves

3 Planning and Approval

[References: GCC 27]

Emergency or other unforeseen works shall always be ordered by the Project Manager.

For leak repair and other simple installation works that do not need detailed design, the Project Manager will simply issue a work order to the Contractor

In cases where design work is required, the Project Manager will issue a preliminary work order on which the Contractor shall carry out the required design works. The design shall be submitted to the Project Manager for approval on which' basis the final work order will be issue to the Contractor.

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Part F: Training and Transfer of Technology

1 Scope of Work

During the Maintenance Period the Contractor shall train the Employers staff and transfer all technology in order to enable them to take over DMA management, maintenance of pressure reducing valves, leak detection scheduling and execution, leak repair management and all other activities required to manage the DMA system and maintain the reduced leakage levels.

The Employer might decide to second leakage management and reduction staff to work jointly with the Contractor's staff on a daily basis. The Employer will continue to pay salaries of seconded staff but the contractor may pay incentive bonuses that are in accordance with bonuses paid to his own staff. Seconded staff shall follow the Contractor's instructions and shall work as part of the Contractor's team. If the Contractor is unsatisfied with the performance of a seconded staff member, he shall inform the Employer. If the unsatisfactory situation continues the Contractor is allowed to reject further secondment of the individual concerned and the Employer may nominate a replacement.

As part of the transfer of technology activities the Contractor shall jointly with the Employers staff develop a medium term asset management strategy that is based on the findings and experience made during the duration of the contract. Strategy development shall be based on updated maps and pipe condition information, detailed burst records and all other information the contractor has collected in the course of the project. All this detailed background information shall be submitted to the Employer, either as part of the continuous reporting or, any additional information, together with the asset management strategy.

2 Approval

At the end of the Leakage Reduction Phase (end of Contract year 4), the Contractor shall submit a detailed Training and Transfer of Technology program that shall be based on the respective section of the Contractor's Technical Proposal but shall also take the experience into account that was made in the course of the contract. The Program shall be approved by the Project Manager.

3 Cost

All activities in respect to training, transfer of technology and development of the asset management strategy are included in the fixed and performance fee for leakage management services.

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Part G: Technical Specifications of Equipment and Materials

1 General

Bidders have to include detailed information on all proposed equipment and materials in their bid. All proposed equipment and materials have to be in accordance with the specifications below or equivalent international standard.

All miscellaneous equipment and materials not listed hereunder shall be of similarly high quality.

Should the contractor want to use other equipment/materials than the ones included in the bid, such equipment/materials must also meet the minimum specifications below and may only be used subject to the Project manager's approval.

2 Pipes

2.1 Main Pipes

2.1.1 Ductile Iron Pipes

- Pipes in accordance with [ISO 2531-1988-K9 PN10]
- Sulphate resistant blast furnace cement lining as per [ISO 4179-2005]
- Outside corrosion protection: zinc layer and bituminous coating, as per [ISO 8179-2004]
- Rubber joints in accordance with [ISO 4633-2002]
- Automatic flexible push in joints [TYTON] or [STANDARD]

2.1.2 uPVC pipes

- According to AS/NZS 1477-1996 PN12, table 4.3 series 2
 - Outer diameter 121.9 mm and 177.3 mm
- Rubber joints according to AS 1646-1992
- Color: blue
- Name of producer, type, pressure and production date shall be marked on every pipe; if pipes are specifically manufactured for this project the word CLIENT shall be added to the other information

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2.2 Service Connections

High-Density Polyethylene (HDPE) Pipes shall be according to ISO 4427-1996, in coils of 100 m, and shall be suitable and approved for the use with potable water at a working pressure of min. PN 10.

The pipes shall be resistant against UV-radiation and shall have black colour with 4 blue longitudinal stripes to indicate the application. Name of producer, type, pressure and production date shall be marked on every pipe.

3 Pipe Fittings and Appurtenances

Flanges of all valves and other appurtenances supplied under this project shall be drilled according to ISO 7005-2-1988 PN 10.

All bolts, nuts and washers used under this project shall be stainless steel 304.

3.1 Valves

Resilient seated gate valves shall be in general according to ISO 7259-1988, double flanged if not otherwise required; with face to face dimensions to EN 558-1 GR 14-short (DIN 3202-F4) and flange dimensions and drilling to ISO 7005-2-1988 PN 10 and shall be suitable for a nominal working pressure of 10 bar.

Body and bonnet shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693) and shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

The wedge shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), fully vulcanized with EPDM or NBR (suitable and approved for potable water), with drain hole and special wedge guiding system with high gliding features to guarantee low operation torques. Wedge nut shall be of bronze and flexibly fixed in the rubberized wedge.

Spindle shall be of the non-rising type and shall be made of stainless steel 304 (X20Cr13) with a rolled thread and shall be polished in the sealing areas. Sealing shall be of the multiple O-ring sealing system. O-rings shall be embedded in non-corrosive material to DIN 3547. Valves from DN 250 mm upwards shall have additionally axial roller bearings in the bonnet to reduce operation torques.

All bolts/nuts shall be additionally sealed to avoid corrosion. Sealing gaskets between body and bonnet shall be embedded in the casting. An additional spindle sealing gasket shall be placed at the top of the bonnet to protect the spindle against friction due to dust and soil from outside.

All resilient seated gate valves that will be used for underground installation and shall be supplied, with extension spindle consisting of galvanized steel rod, spindle adaptor and operating cap and protecting tube of plastic material.

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3.2 Pipe saddles

3.2.1 Pipe saddles for non-metallic pipes

Pipe saddles for use on plastic pipes shall be of the full collar type with a minimum length of 120 mm to support the plastic pipe and with a fully rubber lined sealing area around the full circle with multiple O-rings or multiple lip seals around the outlet.

The outlet of the saddle shall be female thread and specially protected either by a rubber ring or by a special coating to avoid corrosion and incrustation on the blank thread.

The body of the pipe saddle shall be made from ductile iron EN-GJS-400-15 acc. to EN 1563 (GGG 400 DIN 1693) for a nominal working pressure of 10 bar and shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

Stud bolts with nuts and washers and shall be made of stainless steel 304, gaskets shall be of EPDM or NBR (suitable and approved for potable water).

3.2.2 Pipe saddles for metallic pipes

Pipe saddles shall be of the universal type with flexible strap for DI, steel and AC pipes and shall be suitable and approved for the use with potable water at a nominal working pressure of 10 bar.

The outlet of the saddle shall be female thread and specially protected either by a rubber ring or by a special coating to avoid corrosion and incrustation on the blank thread.

The body of the pipe saddle shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 DIN 1693), inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

Saddle strap and bolts/nuts/washers shall be made of stainless steel 304. Strap shall be rubber lined to avoid direct contact between the stainless steel strap and the pipe. Gaskets shall be of EPDM or NBR (suitable and approved for potable water).

3.3 Fittings for HDPE service connections

3.3.1 Pipe fittings

Pipes fittings for the use on HDPE pipes according to DIN 8074/8075 (or equivalent) shall be push-in type and shall be fully traction prove and tight at a nominal working pressure of 10 bar.

Body shall be either of brass, Polypropylene (PP) or UV-resistant Polyoxymethylene (POM), grip ring shall be of Polyacetale; in case of bodies made from plastic material, female threads shall be enforced by stainless steel support rings.

Sealing shall be done by an O-ring made from EPDM or NBR (suitable and approved for potable water).

The design of the fittings shall allow an easy installation and dismantling. Versions shall be available as both, straight and 90° bend female and male adaptors and couplers as well as T-pieces.

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3.3.2 Corporation Stops

Corporation stops shall be of the ball type or ground key type.

Inlet threads shall be fully compatible with the tapping saddle threads.

For $\frac{3}{4}$ in and 1 in corporation stops the outlet shall be a flare nut connection for High-Density polyethylene (HDPE) pipe, fully compatible with the HDPE pipe specified herein.

For 1 $\frac{1}{2}$ in corporation stops, the outlet shall be a pack joint compression connection for High-Density polyethylene (HDPE) pipe, fully compatible with the HDPE pipe specified herein.

The corporation stops, pack joints and flare nuts shall be designed for 10 bars water pressure.

The waterway diameter shall be equal to the nominal size of the corporation stop.

All cast components shall be of brass conforming to ASTM B62.

The ball of Ball Design corporation stops shall rotate between two rubber seats. Rubber shall be Buna-N or equivalent rubber conforming to ASTM D2000. The operating nut shall have a O-ring to provide a watertight seal against the body. The O-ring shall be of EPDM or an equivalent rubber conforming to ASTM D2000.

The key and body of Ground Key Design corporation stops shall be lapped and ground together to assure seating surfaces match.

The flare nut and the valve outlet end shall have machined sealing surfaces that provide a permanent watertight seal on properly flared HDPE pipe.

The pack joint connection shall consist of a threaded sleeve, a threaded nut and a rubber gasket. The design shall provide proper gasket compression against the HDPE pipe to make a watertight connection. The pack joint nut shall have a clamp device to assist axial restraint of the HDPE pipe.

One insert stiffener complying with the requirements shall be supplied with each corporation stop equipped with a pack joint connection.

All threads shall be capped for protection during shipment and handling.

3.3.3 Angle meter valves

Angle meter valves shall be of the ball type.

For $\frac{3}{4}$ in and 1 in angle meter valves, the inlet shall be a flare nut connection for High-Density polyethylene (HDPE) pipe and the outlet shall be a meter swivel nut threaded in accordance with ISO 228-1.

For 1 $\frac{1}{2}$ in angle meter valves, the inlet shall be a pack joint compression connection for High-Density polyethylene (HDPE) pipe and the outlet shall be a meter flange.

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The angle valves, pack joint or flare nut inlet connections and swivel nut or meter flange outlet connections shall be designed for 10 bars water service.

All cast components shall be of brass conforming to ASTM B62.

The ball shall rotate between two rubber seats. Rubber shall be Buna-N or equivalent rubber conforming to ASTM D2000.

The operating head shall rotate over 90 degrees for opening or closing the valve. The operating head shall have two O-rings to provide a watertight seal against the body. The O-rings shall be of EPDM or an equivalent rubber conforming to ASTM D2000.

The flare nut and the valve inlet end shall have machined sealing surfaces that provide a permanent watertight seal on properly flared HDPE pipe.

The pack joint connection shall consist of a threaded sleeve, a threaded nut and a rubber gasket. The design shall provide proper gasket compression against the HDPE pipe to make a watertight connection. The pack joint nut shall have a clamp device to assist axial restraint of the HDPE pipe.

Angle valves shall have padlock wings to lock the valve in the closed position.

One insert stiffener complying with the requirements shall be supplied with each angle valve equipped with a pack joint connection.

3.4 Fire Hydrants

Fire hydrants shall be of the dry - barrel type and shall conform to [COUNTRY SPECIFICATION] and as further specified herein.

Fire hydrants shall be of "Traffic Model" with breakable sections near the ground line designed to break upon impact, complete with safety flanges and steel stem coupling.

Unless otherwise specified materials shall comply with the following requirements.

- Cast iron shall conform to ASTM A 126 Class B.
- Ductile iron shall conform to ASTM A 536 Grade 65-45-12.
- Bronze shall conform to ASTM B 62, Grade D or E.
- Stainless steel shall conform to ASTM A 276, Type 304 or Type 316, or Type 420 for non-wetted parts.

3.5 Ductile iron fittings

Ductile Iron fittings shall be in accordance with ISO 2531-1998, they shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance with DIN 30677-2 and DIN 3476.

All gaskets shall be of EPDM rubber according to ISO 4633-2002.

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3.6 Universal Joints DN 50 – 300 mm

Flanges shall be to ISO 7005-2-1988 PN 10, Gaskets shall be of EPDM or NBR (suitable and approved for potable water).

3.6.1 Universal Couplings

Universal couplings shall be of the wide range type and shall be suitable for the use with steel pipes, cast iron pipes, ductile iron pipes, asbestos cement pipes and UPVC pipes for a nominal working pressure of 10 bar.

Pressure ring and body shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 DIN 1693) or forged steel, and shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

The design of the couplings shall allow a total angular deflection of the pipe of minimum +/- 6 degrees and an axial translation of the pipe of minimum 10 mm.

3.6.2 Universal Flange Adaptors

Universal Flange Adaptors shall be of the wide range type and shall be suitable for the use with steel pipes, cast iron pipes, ductile iron pipes, asbestos cement pipes and UPVC pipes for a nominal working pressure of 10 bar.

Pressure ring and body shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 DIN 1693) or forged steel, and shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

The design of the flange adaptor shall allow a total angular deflection of the pipe of minimum +/- 3 degrees and an axial translation of the pipe of minimum 5 mm.

3.6.3 Couplings and Flange Adaptors > DN 300 mm

Couplings and flange adaptors for dimensions bigger than DN 300 mm shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 DIN 1693) or rolled/forged steel, and shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

3.7 Repair clamps

Pipe repair clamps shall be of the full circle universal type, suitable for CI, DI, steel, AC and PVC pipes.

All metallic parts like band, lugs, bolts, nuts and amour shall be of stainless steel 304, specially treated (passivated) after welding to avoid corrosion. Bolt threads or nuts shall be additionally coated to avoid high friction when tightening. The gasket shall be of EPDM or NBR (suitable and approved for potable water) and shall be of the waffle design and with a vulcanized amour at the overlapping area.

4 DMA inflow metering

Installations in for the DMA inflow chambers shall be in accordance with Drawing D-02 (see Section X - Drawings). The chamber and all pipe installations will have to be re-designed by the Operator

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depending on size and specification of PRV and flow meter. Attention is to be paid on required undisturbed flow before and after the meter as per the manufacturer's recommendations.

4.1 DMA inflow meters

The Contractor shall follow the [APPLICABLE STANDARDS].

DMA inflow meters shall be in accordance with ISO 9104-1991.

Electromagnetic flow meters with an accuracy of +/- 0.5% or better and the ability to accurately measure extremely low off-peak flow rates.

The flow metering system shall include the facility to verify correct operation of the flow-meter by comparison of on-site verification test characteristics with original factory characteristics and calibration settings.

The flow sensor shall be constructed from 304 stainless steel, with an elastomer lining, or equivalent to suit operating conditions. The flow sensor shall be rated IP68 to 5m suitable to be permanently immersed, or to be buried.

- Flanges shall be to ISO 7005-2-1988 PN 10.
- Measuring electrodes shall be of 316 stainless steel.
- Earthing electrodes or external earthing rings shall be provided with the flow sensor.

The flow sensor cabling shall be of a nominated length and shall be produced at the factory. The cabling shall be potted at the flow tube with a re-enterable mix or an equivalent system to maintain the IP68 to 5m submersion or burial capability.

Meters shall be equipped with battery packs that are sufficient to provide power for measurement and transmission of flow data for a minimum period of 5 years with a low battery power indicator.

A remote display unit that shows for flow rate and totalized flow, this unit will be mounted in an above ground equipment box. The totalized flow value shall be retained through battery power failures. Adjustment for tantalizer cut off shall be provided.

Output signals: Frequency - two bi-directional solid state transistor switches. Isolated from process. Used for forward and reverse flows.

The transmitter housing shall offer a minimum of IP65 protection. It shall be rated for operation at ambient temperatures up to 50 degrees Celsius.

4.2 Strainers

Strainers shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance with DIN 30677-2 and DIN 3476. All other metal parts shall be stainless steel.

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5 Pressure Reduction Equipment

5.1 Pressure reducing valves (PRV)

The selection of pressure reducing valves will be one of the most important and technically most difficult decisions to be made. The extremely low day-time pressures (often between 5 and less than 10 meters) are a major challenge for pressure reducing valve requirements.

The Contractor might provide specifications from more than one manufacturer if he wishes to do so. However, all pressure reducing valves proposed must strictly meet the following minimum requirements:

- Main Valve Heat Fusion Epoxy Coated, externally and internally (not painted)
- Main Valve shall have Stainless Steel Seat Ring
- Valves shall have stainless steel stems. Stem less Main valves are not permitted.
- All external fasteners and washers shall be stainless steel 18/8 or better
- Pilot circuit isolation valves for inlet, outlet and valve head isolation
- Pilot system shall have some form of opening speed control. Closing speed controls shall be optional.
- Pressure gauges shall be supplied that will be installed about two diameters upstream and downstream of the PRV
- Equipped with air valves to automatically bleed off air that may become trapped in the valve head during a water supply interruption
- Pilot system must be able to work with most industry standard controllers; necessary adaptors must be provided if required
- Each valve shall be supplied with a variety of springs, taking the extremely low pressure situation into account
- Valve flanges shall be drilled according to ISO 7005-2-1988 PN 10.
- Supplied complete with stainless steel bolts, washers and nuts and gaskets which shall be of EPDM rubber according to ISO 4633-2002.
- Three year warranty for valve to be free of defects in material and workmanship (from the date of shipment)

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- PRVs must have either NSF (American, <http://www.nsf.org/>) or WRAS (UK, <http://www.wras.co.uk/>) or other substantially equivalent internationally accepted certificate (such as Japan, Europe, ect.). All supporting documents must be included in the bid.
- Manufacturer must be able to provide support and maintenance services in [LOCATION]. In case a manufacturer is not doing business within COUNTRY, the Contractor should ensure that the concerned manufacturer, before contract signing or an appropriate timing as agreed with the Employer, will arrange a representative Agent in the country equipped and able to carry out the maintenance, support, repair and stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications.

Contractor to supply a reasonable number (to be agreed with the Project Manager) of valve repair kits containing all internal valve and pilot parts for the various valve types and diameters at the end of the Maintenance Period.

5.2 PRV controllers

Although the DMAs are relatively small in size and fixed outlet PRVs might be sufficient in many cases, the contractor is encouraged to experiment with various controllers to get optimum results and also cater for fire-fighting requirements.

Since it will be in the interest of the Contractor to use only best quality industry standard controllers, the specifications hereunder are kept to a minimum:

- controller to be easily retro fitted to any pressure reducing valve to convert the valve from a fixed regime to advance control.
- units to be fully sealed to IP68 standards, the pressure connections to be of quick-fit type.
- controller to be powered by a fully sealed internal battery, with an expected operational life of 5 years and with low power indicator.

6 Flow and pressure data loggers

All DMA inflow chambers shall be equipped with electronic flow and dual channel pressure loggers, 0-10 bar pressure range, so that the pressure before and after the PRV can be simultaneously measured.

The data logger shall be supplied with minimum standard of four inputs for monitoring any combination of digital or analogue signals.

- Digital – Uni or bi-directional pulse. Suitable for reed switch (non-powered sensors) or Instrument powered e.g. PD4, PD100, Kent, HRP etc.
- Analogue – Pressure Transducers 0-10bar. 4-20mA from isolated sensors.

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The data logger shall be a GSM/SMS combination to give the benefits of SMS for daily polling of data with four hours of GSM standby window for real-time call back.

The logger shall be completely waterproof and submersible to IP68 standards.

The data logger shall be powered by an internal fully sealed battery with a minimum operational life of 5 years and low battery alarm in data packet when downloaded.

The system shall be capable of being telemetry linked by using cellular communications network with an internal GSM/SMS modem.

Data loggers shall also be capable of being interrogated in the field via a comms cable link to a laptop computer, PC, PDA etc.

The GSM/SMS communications shall have the option to enable the logger to “Alarm Out” - i.e. the logger shall be capable of being programmed to dial out to preset telephone numbers (landline or cellular) when alarm conditions are recorded (e.g. when pressures or flows exceed upper or lower limits).

7 Above ground instrumentation box

The contractor shall design above ground mounting boxes in suitable size to house all equipment (like data logger, flow meter display, PRV controller, battery packs) and robust enough to withstand acts of vandalism. Design in principle shall follow the standard CLIENT design (see Drawing number [] in Section X - Drawings).

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Part H: Technical Specifications for Installation and Repair Works

1 General

The list below is a non-exhaustive list given the diversity and complexity of the project.

Wherever no specific works and installation specifications are listed below, CLIENT's internal specifications shall be followed.

The Contractor is furthermore expected to execute all works in accordance with international best practice and of course in accordance with all relevant COUNTRY regulations and norms.

The Contractor is required to take digital photos of all stages of the work progress. Detailed instructions will be given by the Project Manager.

All old pipes, valves and other appurtenances shall be returned to the Employer unless otherwise instructed by the Project Manager.

2 Earthwork

2.1 General

2.1.1 Scope of this section

The section specifies the requirements for the following:

Exploratory pits and trial holes

Cutting road and sidewalk surfaces, trench excavation for pipe-laying, and excavation for construction of concrete structures,

Disposal of surplus spoil from excavations

Bedding preparation and installation,

Backfilling and compaction

Trimming and final clearing up, reinstatement of surfaces

2.1.2 Submittals

Surveyed ground levels, location of services and results of site trial excavations for each street, at least 21 days before planned start of excavation work.

Detailed program of work together with method statements and proposed procedures at least 28 days before proposed initial work start date.

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Detailed of proposed pipeline bedding and backfilling materials and methods of installation at least 28 days before the proposed start date.

Detailed of methods for trenching and excavation shoring at least 28 days before the intended start date of the work.

For the works the method of working shall be submitted for approval more than 14 days before commencement of the work.

The above submittals are neither required for leak repair works nor the replacement of leaking service connections. Only a schedule of the planned works has to be submitted in accordance with the provisions in TSP Part I.

2.1.3 Quality Assurance

2.1.3.1 Investigations and Execution of Pits

Prepare site investigation details and excavate exploratory pits at least two weeks in advance to establish and prepare details of existing services as specified.

2.1.3.2 Inspections During Execution of Earthworks

Excavations may proceed only with the Project Manager's approval of the setting out the original ground level record.

When Excavation has been carried out to the lines and levels required, the Contractor will notify the Project Manager that inspection is required.

2.1.3.3 Quality Control Testing

The following quality control testing is required on the various materials before and during execution of the works:

Standard Proctor Compaction Tests

Sieve Analyses including hydrometer tests

Field densities

Atterberg Limits

As many tests as necessary shall be carried out by the Contractor to ensure the Work conforms to the specifications regardless of any minimum stated.

Provide typical moisture versus density curves for each type and source of material that is to be compacted to a specified density

Provide field density test results on the following basis:

Imported Material for bedding and backfilling of Pipe Zone: every 100m of trench.

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Trench backfill: every 100m of trench for each 0.20m depth of fill.

2.1.4 Program

The Contractor shall prepare and provide detailed programs for the Project Manager's approval.

Indicate sequence and method of working, and include but not limited to the following for each street:

- Procedure and timing of stages to obtain permission to work,
- Inspection of the site, including necessary exploratory pits to establish location of services and trial holes at the Contractor's expense to establish the suitability of soil as backfilling material,
- Existing ground levels,
- Preparation and confirmation of working drawings for execution of the works,
- Setting out the works'
- Cutting of asphalt, concrete or other surfaces,
- Trench excavation, including shoring,
- Disposal of surplus materials off site,
- Bedding and laying and jointing of pipeline,
- Backfilling after pipe laying, and
- Reinstatement.
- Excavation

Excavation work may proceed in accordance with the program only after receipt of the Project Manager approval.

The above procedure is neither required for leak repair works nor the replacement of leaking service connections. Only a schedule of the planned works has to be submitted in accordance with the provisions in TSP Part I.

2.1.5 Records

All leak repairs, and the replacement of leaking service connections, have to be recorded on a standard leak report sheet that will be provided by CLIENT. The other instructions under 2.1.5 are for other pipe laying works.

2.1.5.1 Levels

The contractor shall take and record levels and dimensions as follows:

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Before the surface of any part of the Site is excavated or the works thereon has begun, and, as and when necessary during the progress of the excavation to allow accurate measurement of the different categories of excavation.

Taking and recording all levels and dimension shall be done in an approved manner and in the presence of the Project Manager.

All such levels and measurements, when approved by the Project Manager shall form the basis for measurement.

2.1.5.2 Quality Control Tests

The Contractor shall carefully record all the soil density compaction and other test results.

2.1.6 Contractor’s Responsibilities

The Contractor’s contractual responsibilities include responsibilities for the stability of excavations and for the application of shoring or other appropriate means to support the sides of excavations where necessary, in order to:

Maintain the safety and stability of property and structures adjacent to the trench excavation.

Ensure the safety of the personnel working in the trench for the purposes of bedding, pipelaying and compaction of bedding and backfilling materials.

Ensure that the pipe laying work is carried out in stable ground conditions.

2.2 Bedding and backfilling materials

Except where otherwise directed, all bedding and backfilling, pipeline bedding and backfill materials of pipe zone, above pipe zone, service connection trench and around structures shall be as sand defined in the following table.

<p>2.2.1 Material</p>	<p>a) Clean, firm, nature sand or quarry waste with the following grading:</p> <table border="0"> <thead> <tr> <th style="text-align: left;">Sieve Size</th> <th style="text-align: right;">Percent Passing</th> </tr> </thead> <tbody> <tr> <td>10mm.....</td> <td style="text-align: right;">100</td> </tr> <tr> <td>5mm.....</td> <td style="text-align: right;">60-100</td> </tr> <tr> <td>2mm.....</td> <td style="text-align: right;">30-90</td> </tr> <tr> <td>0.4mm.....</td> <td style="text-align: right;">8-50</td> </tr> <tr> <td>80µm</td> <td style="text-align: right;">0-5</td> </tr> </tbody> </table> <p>b) where shown on the Drawings or directed: Concrete M-150</p>	Sieve Size	Percent Passing	10mm.....	100	5mm.....	60-100	2mm.....	30-90	0.4mm.....	8-50	80µm	0-5
Sieve Size	Percent Passing												
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2.2.2 Compaction Values Required	Average of all values taken shall exceed 95% normal standard Proctor, and no result shall be less than 92%.
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Excavated material that is not suitable for use as backfilling as defined above shall not be re-used and shall be disposed of off site in accordance with clause 2.3.1.3.1

2.3 Excavation and backfilling

2.3.1 Excavation

2.3.1.1 General

- Excavation shall achieve the lines levels gradients and dimensions shown on drawings or as otherwise directed.
- Excavations at foundation level shall be carried out carefully, and all precautions taken to ensure that the bearing capacity of the formation is not disturbed. Excess excavation shall be backfilled as below.
- Repair of any damage to the works or to approved formation caused by the Contractor's excavation operations or negligence of the requirements will be at the Contractor's expense.

2.3.1.2 Pipeline Trenches

2.3.1.2.1 Trench Width

- Trench dimensions and width shall be sufficient to install the various pipes, specials, closures, fittings, valve chambers, and anchorages, as shown on the Drawings and specified herein.
- The width at the top of the trench shall be not more than the outside diameter of the pipe plus 300mm, or 400mm, whichever is the larger.

2.3.1.2.2 Start of Excavation

Where a trench is excavated in a paved surface, whether of asphalt, concrete, or other material, the Contractor shall start by carefully cutting through the paved surface and foundation along the lines of the trench, without loosening or damaging the adjacent parts.

2.3.1.2.3 Trench Cross Section

The trench sides shall be excavated as follows unless specifically varied by the Project Manager:

- With stable soil conditions: vertical sides.
- With soil of low stability: the excavation faces shall be supported by shoring or sheet piling. Additional trench width shall be included to allow proper tamping of backfill and the placing or removal of piles or shoring.

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- Trench depth shall permit the pipe to be laid to the gradients and elevations shown on the Drawings.
- At pipe joints, additional excavation shall be made for the pipe joints.

2.3.1.2.4. Length of Trench Left Open

- The trench open ahead of pipe laying operations shall be limited to the length of pipe which can be laid in one day except as otherwise authorized by the Project Manager.
- If, natural or artificial conditions create hazardous operations in the performance of excavation, the Project Manager may specify further limitation in the length of open trench permitted.

2.3.1.3. Disposal of Excavated Materials

2.3.1.3.1. General

- All excavated materials shall be piled in such a manner not to endanger the work or any buildings, structures or property or obstruct roads pavements and driveways or cause obstruction to traffic.
- Surplus excavated materials shall be disposed off site to locations arranged by the Contractor, to the general approval of the Project Manager and relevant authorities, and shall not cause any obstruction or interference with the natural drainage of the land.

2.3.1.3.2. Excavated Materials for Reuse

- When excavated sandy material suitable for re-use, as defined in Clause 2.2.1, a portion of the excavated material may be use for backfilling.
- The Contractor shall make his own arrangements for the temporary storage of the suitable excavated materials, and for the permanent disposal off side of surplus materials.
- After completion of pipelaying the Contractor shall return suitable selected materials for backfilling and dispose of surplus off site, as defined in Clause 2.2.1.

2.3.1.4. Structures

- The surface of the formation shall be cleaned of all loose material and be free from standing for running water.
- The concrete blinding layer for structures shall be placed as soon as possible after the completion of the final 500mm of the excavation to formation level, and in any case within 72 hours.
- Excavations shall be to the limits and grades shown in the Drawings to receive all structures, fittings and appurtenances. Excavations shall be to dimensions of the outside surfaces of said structures plus a minimum of 600mm in addition to provision for shaping, and dewatering as specified herein or ordered by the Project Manager.

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2.3.1.5. Excess Excavation

- Excess excavation below the designated formation leveling otherwise sound material shall be backfilled at the Contractor's cost as follows:
- For the pipe trenches fill with concrete or the pipe bedding or other material that the Project Manager may direct.
- For structure foundation fill with [Class M-150] concrete to the correct level

2.3.1.6. Shoring

2.3.1.6.1. Extent and Installation

Excavations shall be shored where ground conditions are such that the stability or safety of adjacent structures or properties would be compromised.

The Contractor shall submit his detailed designs and proposed method of installation and removal of shoring to the Project Manager for consideration and approval. The proposals shall show but not be limited to:

- the extent of excavation or length of pipeline trench to be shored
- the proposed type, material, section, framing and bracing,
- method of installation and removal of the shoring, and
- how the safety of the work and workmen is ensured.

The Project Manager's approval does not relieve the Contractor of responsibility for the adequacy of shoring and bracing.

2.3.1.6.2. Removal of Shoring

Shoring shall be removed as backfilling proceeds and material thoroughly compacted into the space left by the shoring and supports as they are withdrawn

2.3.2 Backfilling

- Backfilling shall conform with requirements of the DCTPW regulations. Backfilling shall proceed only when the pipeline or other installation has been completed, tested and required and approved by the Project Manager. Work covered up without such approval shall be exposed to view following the Project Manager's instruction, at the Contractor's cost and expense.
- Materials shall be as specified in Clause 2.2, Para 1 and compacted as defined in Clause 2.2.2 and 2.3.3
- The Contractor shall allow for settlement to occur and shall make up and repair the temporary surface reinstatement as necessary, to the satisfaction of the Project Manager, until the final reinstatement has been executed.

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- Backfilling around structures, shall start only after concrete has reached a satisfactory strength and only 14 days after concreting except directed or approved by the Project Manager.

2.3.3 Compaction

2.3.3.1. Plant and Equipment

- Mechanical tampers with flattened feet shall be used to properly compact the materials under, on each side and over the pipelines.
- Rolling methods may also be used subject to adequate cover having been achieved over the pipeline and with the approval of the project Manager.

2.3.3.2. Thickness of Layers

Backfill shall be placed and compacted in layers of maximum 200mm thick. Where special care is required to achieve maximum compaction, each layer shall be maximum 150 thick.

2.3.3.3. Moisture Content

Before and during compaction, the materials shall have a moisture content close to the optimum for obtaining maximum compaction of the material as determined by site trials on the materials.

2.3.3.4. Minimum Density after compaction

- Each layer material shall be compacted achieve test results given in Clause 2.2.2 hereof
- The Contractor shall carry out quality control tests as defined in Clause 2.1.5.2 hereof.

2.3.4 Reinstatement of surfaces

2.3.4.1. Temporary Reinstatement

- After backfilling the pipeline trench up to the level shown on the Drawings or as directed by the Project Manager, the Contractor shall install and compact temporary road surface reinstatement.
- To accommodate settlement, temporary surface materials shall be to the same standard as the road.
- The Contractor shall maintain the reinstatement and top restore additional material as necessary, to accommodate settlement for a period of not less than two months

2.3.4.2. Permanent Reinstatement

- Permanent reinstatement of roads and pavements shall restore them to their original condition.
- The permanent reinstatement shall be carried out by Contractors who have the specific approval of the Roads Department of Ho Chi Minh City, and shall be carried out by the said subcontractor to the standards and requirements and under the supervision and control of the Department.

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3 Pipeline installation

3.1 General

3.1.1 Scope of this section

- The collection of pipes and materials provided by the Contractor, and delivery to temporary stores ready for installation.
- Installation, jointing, testing and setting to work of pipelines, valves and fittings and making of service connections, using as many full time installation teams as necessary for the completion of the works within the required period.

3.1.2 Work not Included in this Section

- Earth works, trench excavation, pipe bedding and backfilling.
- Trench shoring.
- Construction of chambers and thrust blocks.

3.1.3 Related Sections

General Requirements

Earthworks and Surface Restoration

3.1.4 Submittals

3.1.4.1 Method Statements

Generic method statements for leak repair works and replacement of leaking service connections and detailed method statements shall be submitted for the review and approval of the Project Manager not less than two weeks before work starts on site.

The statements shall show:

- Procedures for obtaining permission to open roads, site investigations and procedures, and matters related to earthworks and excavation and reinstatement.
- Proposed procedures for identifying and obtaining the necessary materials and fittings provided by the Contractor,
- Transportation and temporary storage arrangements of the materials at the work sites
- How the work is proposed under various site, surface, traffic and ground conditions, together with explanatory sketches, drawings, and supporting the documents,

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- Details of all precautionary methods proposed to prevent the pipes from moving at any stage during installation, whether due to flotation or any other cause.
- Hydraulic testing and sterilization arrangements on completion.

3.1.4.2 Quality Control

Quality control proposals for meeting the requirements of the Specification.

3.1.4.3 Program

- Overall program showing requisition, delivery to site, installation, testing and completion program to match the contractual program, and showing the number of sections and number of full time working crew that will be operating concurrently.
- Weekly program for the following two weeks throughout the course of the work, to show all matters related to the installation program, showing each street that is in process of permission to work, site investigations, requisition, and delivery of pipes and fitting, installation, construction, testing and sterilization.

3.2. Pipe and materials requisition and storage

3.2.1 Materials Provided by the Contractor

The Contractor shall be responsible for the provision of all materials, plant, equipment and labour required for the construction works, including but not limited to the provision and installation of temporary works of all sorts needed for the installation, cleaning, flushing, sterilization, finishing and completion of the pipelines in accordance with the Specifications, except for the materials, pipes, fittings, valves and appurtenances provided by the Contractor.

For ductile iron pipes, the materials provided by the Contractor shall include, but not be limited to:

- Approved quick setting epoxy paint for application to pipe cut ends,
- Coal tar epoxy paint to repair exterior coatings of pipes and fittings,
- Cement mortar to repair interior linings of pipes and fitting.

For the external protection of mechanical couplings and flanged joints, the Contractor shall be provide Denso or similar products.

The contractor shall also provide and install warning plastic mesh or grid material to place over the pipes after laying as shown on the Drawings. The Width of the mesh or grid shall be 0.3m.

3.2.2 Contractor's Responsibility for the Pipes and Materials

The Contractor shall be deemed to entirely responsible for every aspect of the pipes and fitting and equipment from the time he takes delivery of the said pipes and fittings until the completed installation is formally taken over by the Employer.

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Any damage to, or losses of pipes, fittings and equipment, including all the gaskets bolts and special tools whatsoever that have been provided by Contractor to install shall be replaced free of cost to the Employer. Alternatively the Employer shall deduct from the payments due to the Contractor the full cost of the goods involved plus an amount of [20]%.

3.2.3 Pipe Handling

Only plant of appropriate capacity and purpose made equipment may be used for handling the pipes and fitting, which shall always be supported in accordance with the manufacture's recommendations or other approved manner, to protect the pipe ends and fitting or specials from injury.

Pipes and fittings in storage, whether of short or long term duration, shall always be properly supported.

Pipes and fittings and materials shall not be subjected to any impact or other treatment that might damage the pipe or its protective surfaces.

3.2.4 Transportation

Any vehicle on which pipes are to be transported shall have a body of such length that the pipe do not overhang.

Pipe of DN300mm and above shall be place on cradles.

Pipes and fittings shall always be properly secured against movement shall also be protected from chafing and surface damage during transport.

3.2.5 Delivery to Site

The Contractor shall make all arrangements for the timely delivery of the correct pipes from the pipe storage area, to the trench side, or to adjacent temporary storage areas to suit the Contractor's program and the nature of the general site conditions.

Temporary storage of rubber gaskets, bolt, small fittings shall be in secure conditions, and protected from UV light and the weather generally until installed

At all times there shall be sufficient quantities of pipe and fittings at each pipe laying location to ensure continuous installation progress, within the maximum period prescribed.

Any pipe or special damaged in transit or delivery to the trench sites shall be replaced or repaired if approved by the Project Manager, all at the expense of the Contractor.

3.3. Pipelaying and installation

3.3.1 General

The Contractor shall provide labour, materials, tools, equipment, and plant for the installation and handing, laying and installation of the pipes and fittings to the lines, grades and elevations shown on the Drawings.

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3.3.2 Pipes to be Clean

Pipes and fittings shall be carefully cleaned of foreign substances which may have been collected therein before installation and kept clean at all times thereafter, to ensure that there is no difficulty later with flushing and sterilization of the pipe lines on completion.

Before leaving the work for the night or for holidays or at other times when pipe installation is to stop, all pipeline ends shall closed with suitable wood or metal bulkheads to prevent ingress of animals or persons the Contractor shall make all necessary arrangements to maintain dewatering pumps in operation so that the pipeline do not fill with dirty water.

The Contractor shall be deemed responsible for any delays caused to his installation program arising from his failure to keep the interior of the pipes clean.

3.3.3 Inspection of Pipe at Trench Site

Each length of pipe shall be carefully examined before it is lowered into its laying position to ensure that only new undamaged pipe shall be installed following the approval of the Project Manager.

Any pipes found damaged shall be rejected and removed from the site for repair, cutting off the damaged portion if short, or disposal, subject to the opinion of the Project Manager.

3.3.4 Pipe Cutting

Cutting of pipes shall be carried out in accordance with the pipe manufacture's recommendations, without damage to the pipe or the protective coating, and so as to leave a smooth face normal to the pipe axis, chamfered as necessary for subsequent jointing.

All cutting shall be done with proper cutting tools and apparatus, and the Contractor shall always be responsible for the accuracy of the measurement of the cut pipe required.

With ductile iron pipes, the cut ends shall be coated with quick drying epoxy paint to the approval of the Project Manager which shall be dry before the joint is made.

The Contractor shall remove all unused offcuts from the site on completion, and return them to the Employer's stores. Such offcuts shall be set against the Contractor losses, provided the offcuts did not arise from the repair of damaged pipes.

3.3.5 Pipe Bedding

Bedding shall form a continuous, sound and uniform bearing for the full length of the pipe except for small grooves for removal of sling, and at the ends of joint.

All such grooves shall be filled and thoroughly compacted with bedding material after removal of the sling and completion of jointing.

3.3.6 Pipe Installation

Pipes shall be carefully lowered into the trench.

The bedding shall have been prepared and compacted to the required line and level, so that the pipe will be lowered directly onto the bedding. Temporary supports on blocks will not be permitted.

Larger pipes should be supported by the crane during jointing to reduce the jointing effort.

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3.3.7. Flotation

The Contractor shall take all precautions necessary to prevent pipes from floating due to accidental flooding of the or from any other cause, and shall be responsible for the consequential cost of remedial work delays.

The Contractor shall include details of precautionary methods proposed for pipe restraint with his method statements for the execution of the work.

3.3.8 Jointing

3.3.8.1 Spigot and Socket Type

The spigot and socket to be joined shall be thoroughly cleaned just before joining and the joint rubber gasket and lubricant supplied by the manufacturer shall be installed and applied in accordance with the manufacturers' recommendations.

When a joint deflection is needed to accommodate a grade or an alignment adjustment, the deflection should be made only when the joint has been made as described above.

The amount of the joint deflection must not exceed the limits imposed by the design or recommended by the manufacturer.

3.3.8.2 Mechanical Couplings

In the case of mechanical couplings the bolts shall be tighten gradually so that the components of the coupling are drawn together uniformly.

The manufacturer's recommendation shall be followed.

3.3.8.3 Flanged joints

Flanged joints shall be completed in like manner, and in accordance with the manufacturer's recommendations as regards maximum torque applied to bolts.

3.3.8.4 Joint for Polyethylene Pipes

Polyethylene pipes shall be joined with push-in fittings (female-female couplers either straight, 90° bends, or T-pieces as per the specifications in TSP Part G 3.3).

3.3.9 Pipe Sleeving

Wherever indicated on the drawings, or ordered by the Project Manager, polyethylene sleeving, provided by the Contractor shall be installed to cover the exterior of ductile iron pipes.

Prior to installation, the sleeving shall be stored out of direct sunlight, and during installation such exposure kept to a minimum.

Sleeving of appropriate size for the pipe being installed shall be slipped over the pipe before it is lowered into the trench, and fixed in accordance with the manufacturer's recommendations to ensure a tight, neat water proof fit a long the whole length of the pipe.

After jointing the pipes and installation of the fittings, sleeving of appropriate size shall be installed around the joints and fittings.

3.3.10 Valves

3.3.10.1 Valves in the Ground

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Generally, DN 350mm and smaller valves shall be placed directly in the ground when not installed in chambers with larger valves.

The valves are provided with surface boxes and protection tubes, and shall be installed, and supported on a concrete block as shown on the drawings.

3.3.10.2 Valves in chambers

Valves for installation in chambers shall be hand-wheel operated and installed as shown on the drawings.

3.3.11 Thrust Blocks and Restraints

Bends, plugged ends, tees and tapers shall be well braced against undisturbed earth by the use of concrete thrust blocks, as shown on the typical drawings.

Thrust blocks shall be installed at every location where they are required, even if not specially shown or detailed on a drawing.

Where faces of anchor blocks are shown or detailed as having an area or dimension to bear against undisturbed ground, the Contractor shall take all necessary measures to ensure that the minimum dimensions are achieved.

3.3.12 External protection of joints

Mechanical couplings, flanged joints and saddle straps shall be protected on site by the cold application of Densyl tape or similar approved material supplied by the Contractor.

Application of Densyl tape with Denso Primer, Densyl Mastic and Outerwraps shall be strictly in accordance with the manufacturer's recommendations

3.4 Connections to existing water mains

Connection shall be made at the location shown on the drawings, from existing plugged ends or from lines to be cut.

The level of an existing line shall be accurately ascertained by the contractor and the exact details of all the materials and other requirements determined and listed in a detailed method statement to be submitted for the approval of Project Manager.

The Contractor must have the approval of the Project Manager and the Employer before any work is started and the Employer shall have made arrangements for the closing off of supplies as well as proposing the most appropriate time for the shut-down.

The Contractor must consider execution of such connections as early in the program as practicable, because the Employer will need to select a time when there will be least interference to the network and will not accept any requests for extensions of the Contractor period arising from delays in finding a suitable time for the connections.

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3.5 Fire Hydrants

Leaking of non-functional fire hydrants shall be replaced at the same location or as instructed by the Project Manager.

3.6 Services Connections

3.6.1 General

Service Connections shall be carried out in accordance with the typical arrangement shown on drawing **xxx - xxx**, to run from the pipe saddle and the corporation stop horizontally (at the depth of the main pipe) to a 90° elbow and then vertically to the 90° stop cock before the customer meter. The contractor's responsibility ends with the installation of the stop cock.

If an existing service connection is replaced by a new service connection, the old pipe saddle has to be removed and the old tapping hole has to be covered with a stainless steel repair clamp (as specified in 3.7 of Part G) and the new pipe saddles has to be installed as per the description above.

The sizes of the service connections shall be designed based on customer's consumption.

The Contractor shall prepare trenches for the service connections generally in accordance with the pipeline trenching requirements, and the reinstatement and compaction of the backfill follow the same procedure.

3.6.2 Interruption of supplies to consumers

The supply to any consumer's premises shall not be interrupted for more than one working day while the new service connection is made.

The Contractor shall be responsible for ensuring that the individual consumers are informed in advance of the timing and duration of any shutdown and for ensuring the access is available to the premises for the execution of the work necessary.

3.6.3 General installation procedure

As much of the new service connections as practically possible shall be completed up to the surface, ready for jointing with the existing stop cock and water meter or for removal of the stop cock and water meter and their replacement.

Upon completion of the service connection as above, jointing with the existing stop cock and water meter or removal and replacement of these facilities shall be executed depending on how the existing supply can be discontinued and shall be in accordance with one of the following alternatives, where either:

- (a) all the service connections supply by an existing distribution line may be isolated by the closure of an existing valve such that when distribution line is closed, all the service connections can be completed and tested during the course of one working day or working night as authorized by CLIENT regulations, or

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- (b) Each service connection is connection is completed on an individual basis and the existing supply cut off by either
- (i) Closure of the corporation cock on the existing main – if there is one, or
 - (ii) Installation by the Contractor of an effective water tight valve or stopper in the existing service line,

In either case the contractor shall provide all the necessary labour plant and equipment for the stopping of the existing supply to the service connection.

3.6.4 Pipe Saddles

The installation of pipe saddles on new or existing pipes shall be carried under pressure.

The Contractor shall follow the detailed procedures of the manufacturer and supplier of the under-pressure pipe equipment to install and secure the pipe saddles and to connect the corporation stops to them.

The pipe saddles shall generally be installed horizontally, unless otherwise by the Project Manager.

3.6.5 Customer meters

The replacement of existing or installation of new customer meters shall not be done by the contractor unless otherwise instructed by the Project Manager.

3.6.6 Ownership of meter and materials

All existing meters, valves and fittings shall remain the property of the Employer.

The Contractor shall return all meters valves and fittings removed to the Employer complete and undamaged, other than by marks and scoring necessarily arising from the removal of the items. The contractor is not expected to dismantle all the component pieces of the assemblies except if required for removal.

Where meters assemblies are not returned complete as indicated above, the Employer will deduct 50% of the cost of the supply of the same assembly in the new condition at current prices from the amount due to the contractor for payment under the contractor.

4 Pressure Testing

4.1 General

Field tests shall be applied as soon as practicable after installation and in any event before connecting to any existing service.

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Before service connection installation may start, the distribution network shall be tested in sections, as they are completed, to confirm that the completed installation will withstand the test pressures applied without movement of any pipe or component and without leakage in excess of the allowance.

The Contractor shall provide all the labour and equipment whatsoever necessary for the testing operation.

Upon completion of the testing and connection to supply contractor may proceed with the service connections.

Any question as to whether a pipeline or any section of it is complete for the purposes of hand over will not be considered until testing is complete.

4.2 Water for testing

Only potable water shall be used for testing and the contractor shall obtain and pay for the water to test the pipeline

The Contractor shall submit all details of the source and condition of the water proposed for testing to the Project Manager for approval.

4.3 Stopends

The Contractor shall take all measures necessary and shall provide all the material necessary for the construction and installation of stop ends and bracing to withstand the forces generated by the test pressures and the forces distributed to undisturbed sound ground or to existing or specially constructed structures.

The Contractor shall provide detailed of the bulkheads or end closures proposed, and should incorporate facilities for the release of air.

The numbers and location of stop ends will depend on the contractor's overall program of works and the length of section to be tested.

4.4 Sections for testing

4.4.1 Distribution pipelines

The pipeline shall be backfilled as far as necessary to provide restraint of the pipes under the test pressure, particularly at or near bends or stop ends.

All temporary and permanent pipeline restraints shall be properly installed prior to the application of the test pressure.

Where the Contractor has substantially completed backfilling before testing, for whatever reason, he is still liable for the cost and time needed to search and remedy any defective joint or joints discovered by the testing.

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4.4.2 Service connections

Every service connection shall be tested individually. The test shall be applied between the closed corporation cock and the angle meter valve and the test pressure applied at the outlet point of the angle meter valve.

4.5 Filling

Lines should be filled as soon as practicable after laying, from a low point, at a rate that will avoid possible water hammer and development of excessive pressures.

Pipes with cement linings shall be kept filled and with a pressure of about 3 bar applied for 24 hours before hydrostatic test is made; plastic and non-absorbent pipes may be filled and tested immediately.

Any leaks revealed during the filling and soaking stage shall immediately be repaired with costs and delays to the contractor's account.

4.6 Test pressures

Distribution pipes and service connection shall be tested to 6 bar pressure, measured at the lowest elevation of the pipe under test, only if this makes any significant difference to the actual pressure applied, as the area is generally flat.

4.7 Application of pressure

The test pressure shall be applied, using a pump of suitable pressure and delivery capacity and the amount of leakage shall be measured by drawing from either:

- (a) An approved calibrated water tank or
- (b) A suitable calibrated water meter obtained from the Employer.

When the hydrostatic test pressure has been obtained in the pipeline, this pressure shall be maintained for not less than 1 hour.

Regardless of the actual measured leakage rate, all detectable leaks should be stopped whether from the pipe or any appurtenances. After repairs to correct detectable leaks, the pipeline shall be refilled and the test pressure reapplied. This process shall be repeated until no further leaks can be detected to the approval of the Project Manager.

The cost of all work whatsoever necessary to locate and repair leaks or other defects which may develop under the test, and subsequent to secure the required tightness shall be borne by the contractor.

The contractor shall carefully restore any sections of the pipeline excavated for the purpose of locating leaks to their original condition or to the condition required under the terms of this contract.

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4.8 Permitted leakage rates

The volume of leakage shall be measured during a test period of not less than 1 hour at the defined test pressure and shall not exceed the rate amount needed to maintain the pressure constant throughout the test period and determined from the following formula:

$$V = 1/715 \times L \times D \times \sqrt{P} \quad \text{litres/hour}$$

Where L is the length of the pipe in m, D is the nominal diameter of pipeline in mm and P is the test pressure in kPa (with P = 600 kPa)

After the pipe has successfully met all the test requirements, cleaning, flushing and sterilizing of the line shall proceed as provided below

Upon acceptance of test results by the project manager, backfilling of the section of pipeline may be completed if not already complete.

5 Disinfection of pipelines

5.1 General

All potable water pipe, fitting, valves, meters and appurtenances shall be disinfected by the Contractor as specified herein, unless otherwise directed by the Project Manager.

All water and chlorine required for disinfection of pipelines shall be provided by the Contractor at his own expense.

Bacteriological testing will be performed by an approved laboratory.

5.2 Interior of pipes to be kept clean

The Contractor shall again note clause 5.3 hereof, and take extreme care to prevent ingress of dirt or foreign materials of any kind into the pipework.

If in the opinion of the Project Manager, dirt or other foreign material has entered the pipework, which can not be removed by flushing, the Contractor shall clean and swab the interior of the pipework with a five percent sodium hypochlorite disinfecting solution, to loosen and remove such foreign materials, to the satisfaction of the project management.

5.3 Cleaning and disinfection

The Contractor shall provide all labour, attendance, equipment, materials and testing apparatus, as may be necessary for the effective disinfection of all pipeline, and shall provide all the labour and attendance and the course thereof that are required to obtain the approval and certification of the Project Manager.

After testing immediately before commissioning, all pipeline shall be washed out and disinfected as follow:

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- (a) All mains shall be flush out with clean water until there is no evidence of foreign mater or colour in the waste flushing water.
- (b) A stock disinfecting solution shall be prepare by mixing for about 5 minutes, in clear container, solution hypochlorite solution (15% available chlorine) and distilled water in the proportion of 0.8 litres to 1000 litres water by volume. Stock solution shall be made up fresh daily.
- (c) The main to be disinfected shall be filled with potable water at the same time as the stock solution is added, through a convenient connection point, and in such quantities (to be determined by the Contractor and approved by Project Manager) as will result in a final solution containing 50mg/l free chlorine.
- (d) Care shall be taken to ensure that the stock solution is added at the constant rate, commencing when water is fed into the main and ending as soon as the main is filled.

Every main charged with disinfection solution shall stand for 24 hours, after which sample shall be taken at a washout valve by the Contractor in the presence of the Project Manager, from whom sterile sampling bottle shall be obtained and tested for free chlorine, for action as follows:

- (a) If the sample does not show at least 2mg/l free chlorine, disinfection shall be repeated.
- (b) If the sample is satisfactory the main shall be emptied, flushed out and filled with treated water and allowed to stand for 1 hour.

Two further sample shall then be taken as before one for a further determination of free chlorine and the other, in a sterilized bottle, for bacteriological analysis for action as follows:

- (a) If the free chlorine determination shows more than 4mg/l free chlorine the main shall be flushed out again.
- (b) If the bacteriological analysis is unsatisfactory, disinfection and sampling shall be repeated until satisfactory results are obtained before the main is commissioned.

5.4 Certificate of Completion

When the entire pipeline has passed this test, and provided all other requirements of this Contract have been met, the Project Manager will issue a Certificate of Completion in accordance with the Conditions of Contract.

6 Service connection installation

Service connections have to be installed in accordance with the design drawing No **XXX - XXX** to be found in Section X – Drawings.

Customer meters will be supplied and installed by the Employer.

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7 Leak repair

7.1 Leaks on main pipelines

Leaks on main pipelines shall if possible be repaired by using stainless steel repair clamps. In case the damage is too large (e.g. longitudinal split) the damaged pipe shall be replaced by a new section of pipe, connected to the old pipe with flexible joints or flange adaptors.

Intrusion of ground water into the main pipe has to be avoided as far as possible.

7.2 Leaks on service connections

Leaking service connections shall be entirely replaced, from and including the pipe saddle until the customer meter.

The only exception when a leaking service connection may be repaired and not replaced is when the fittings near the customer meter are leaking and the problem can easily and durably be fixed.

Service connections have to be installed in accordance with the design drawing No. [] to be found in Section X - Drawings

Service connection fittings, other than the fittings specified in CSP J 3.3, like one-way valves and stop cocks before and after the meter, shall be in accordance with the Employer's commonly used materials.

7.3 Leaking valves

Leaking sluice valves inside the DMA or boundary valves of the DMA shall be replaced with new valves, even if only the stuffing box (gland) is leaking.

Valves shall be installed complete with extension spindle, protecting tube and surface box.

In case leaking valves are found outside of the DMAs, the Contractor shall report them to the Project Manager who will decide if and by what technical means the valve shall be repaired or replaced.

7.4 Leaking fire hydrants

Leaking fire hydrants shall be replaced by new hydrants.

Fire hydrants found with other operational deficiencies shall be reported to the Project Manager and will be dealt with by the Employer unless otherwise instructed by the Project Manager.

7.5 Other leaks

Other miscellaneous leaks shall be repaired using appropriate standard industry technologies.

8 DMA inflow chambers

The DMA inflow chambers shall be constructed according to a standardized design that the Contractor shall develop and submit for approval to the Project Manager. The design shall in principle be based on Drawing D-02 (see Section X - Drawings).

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Chamber covers shall be lockable and might be either heavy duty cast iron covers or steel covers – depending on the location of the chamber in respect to heavy traffic. Chamber covers have always to be approved by the Project Manager.

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Part I: The Mechanism for Road Excavation and Reinstatement

Chapter I

GENERAL PROVISIONS

Article 1. Purpose:

This Regulation is promulgated to create a legal basis for priority policies in road excavation and reinstatement for the Non-Revenue Water Management Sub-project (under COUNTRY Urban Water Supply Development Project, World Bank Credit).

Article 2. Scope of governance and subjects of application:

1. This Regulation is applicable only to the Employer (CLIENT) and units participating in construction components under CLIENT Water Management Sub-project (under COUNTRY Urban Water Supply Development Project, World Bank Credit).
2. The scope of application of this Regulation is on only [] Zones.

Article 3. Interpretation:

In this Regulation, the phrase "Regulation No. []" means the Regulation on road excavation and reinstatement in construction of infrastructure works within the area of [].

Chapter II

DETAILED PROCEDURES AND REGULATIONS ON ROAD EXCAVATION AND REINSTATEMENT

Article 4. For leak detection and repairs on the roads within the approved scope of sub-project: (as settlement of technical emergent breakdowns set forth in Item 1, Article 5, Regulation No.145).

1. CLIENT is exempted from implementing procedures for obtainment of road excavation permits for leak detection and repairs on the roads within the approved scope of sub-project.
2. CLIENT is permitted to excavate on roads included in the list of roads prohibited to excavate provided annually by Department of Transport and Public Works, and to allowed to excavate in the daytime on all roads included in the list of roads prohibited to excavate provided annually by Department of Transport and Public Works. Specifically for the roads which have been newly spread with asphalt on the surface, still in the maintenance period, CLIENT must agree in written with the maintenance unit on maintenance obligations upon excavation and reinstatement.

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3. Before commencement, CLIENT must report in written to related District People's Committees, Department of Transport and Public Works, Urban Traffic Management Area No. 01 and Inspection Section of Department of Transport and Public Works for their monitoring and checking.
4. CLIENT should have incentive policies, to encourage participation of contractors using state-of-the-art technologies and equipment in leak detection and repairs.

Article 5. For installation of new pipelines, replacement of old pipelines, building and installation of valve chambers, bulk water meter chambers.

1. CLIENT will be considered to be granted the permit of road excavation and reinstatement corresponding to the scope and progress of each component of works. (Exception 9, Article 4, Regulation No.145)
2. The Application file for excavation permit comprises of (amending to Item 3, Article 4 of Regulation No.145):
 - Application for construction of entities, individuals having demand of road excavation for installation of underground works. The application must fulfilled with complete data for the basis of the license.
 - Drawings showing the premises, indicating excavation locations and dimensions excavation, and reinstatement structure.
 - Written documents of agreement on constructing plans, methods and progresses of construction agreed between the Client and the executing unit; in the case of excavations on the roadsides with trench length of less than 30m, the construction progress schedule to be required only, no need to prepare measures and progress of construction.

For the road routes of which the premises have been taken-over, under clearance for construction or under construction to rehabilitate, upgrade and repair, the entities and individuals who have the demand of road excavation have to supplement agreed documents on techniques of road excavation and reinstatement, implementation progress, and collaboration agreement during the implementation of the Employer managing the project on road rehabilitation, upgrading, repair.

3. Urban Traffic Management Area []0 will be responsible for review to grant the permit within 3 working days as from receiving a complete set of eligible application documents.
4. CLIENT is permitted to excavate on roads included in the list of roads prohibited to excavate provided annually by Department of Transport and Public Works, and to allowed to excavate in the daytime on all roads included in the list of roads prohibited to excavate provided annually by Department of Transport and Public Works. Specifically for the roads which have been newly spread with asphalt on the surface, still in the maintenance period, CLIENT must agree in written with the maintenance unit on maintenance obligations upon excavation and reinstatement.
5. CLIENT should have incentive policies, to encourage participation of contractors using underground excavating equipment (robot) to implement works.

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Chapter III

REGULATIONS ON TRAFFIC SAFETY GUARANTEE DURING ROAD EXCAVATION AND REINSTATEMENT

Article 6. For construction locations in the area or crossroads or on the key traffic routes where the traffic jams and accidents usually occur:

CLIENT will be responsible for report to the Department of Transport and Public Works for its review and acceptance of methods to ensure traffic safety during construction to the Department of Transport and Public Works. The maximum period for the Department of Transport and Public Works to review and settle the submission is three (03) days, as from receiving a complete set of eligible application documents.

Chapter IV

INSPECTION AND SETTLEMENT OF BREACHES OF ROAD EXCAVATION AND REINSTATEMENT REGULATIONS

Article 7. For Inspection and Settlement of breaches of Sub-project requirements:

1. For road excavation and leak detection and repairs on the roads within the approved scope of sub-project, if CLIENT fails to detect exact leakage locations, the Employer will incur a fine in twice of the current fine applied for the same breach action.
2. If the case is that the construction unit has been punished for more than 3 times (for the same component), but has not apply measures to remedy its breach or pay its fines timely as required, the competent authority to license will not continue to give permits to the Client for such component.

Chapter V

EXECUTION PROVISION

Article 8. The Director of Department of Transport and Public Works is responsible for instruction, causing to execute this Decision. During the implementation, if any difficulties or any necessary issues to be amended and supplemented to appropriate to practical status, the Department of Transport and Public Works will be responsible for collection and proposal to the City People's Committee for its adjustment.

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Part J: Environmental Protection Procedures

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires a comprehensive approach, involving consideration of impacts to air quality, water quality and land. Specifically, pollution control for this Project shall involve management of dredged or excavated materials, stormwater runoff, wastewater, noise, dust, odor, solid waste, and other pollutants.
- C. This Section is intended to ensure that construction is achieved with a minimum of nuisance to the local communities and minimal disturbance to the biophysical environment. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines that are acceptable to the Engineer and relevant authorities.
- D. The Contractor shall establish, maintain and implement an Environmental Protection Plan, to be approved by the Engineer prior to implementation. The Contractor's Plan shall be headed by a professional full-time Environmental Officer who shall be responsible for managing all aspects of occupational health and environmental protection, and also related activities such as public information and consultation in coordination with the Employer. The Environmental Protection Plan shall be based on ISO 14000 which is also a COUNTRY standard. Contractor's certification of ISO 14001 is advisable but not compulsory. All costs associated with the Plan shall be included in the Contract price.

1.02 APPLICABLE REGULATIONS

- A. Comply with all applicable national and local laws and regulations concerning environmental pollution control and abatement.
- B. Laws, regulations and permits that shall govern the operations include, but are not limited to, the following:
 1. LAWS
[]
 2. REGULATIONS
[]

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3. STANDARDS

[]

4. PERMITS

- a. A permit shall be sought from [MINISTRY] prior to felling any large tree and clearing grass beds for site clearance. The work of tree felling may be contracted through the Employer to [MINISTRY] to ensure compliance.
- b. The Contractor shall coordinate with relevant utility agencies through the Employer for protection or relocation of utilities in the project site. These utilities consist of, but are not limited to: water pipes, telephone and power lines/cables, TV cables, drains and sewers, lawns and trees.
- c. For transport and disposal of excavated materials, construction spoils etc., the Contractor shall seek an agreement with the person that owns the land-use right for the disposal site and a permit of local authorities where the disposal site is located. In addition, the transport company should show a valid business license indicating that the company is permitted to transport the said materials.

1.03 NOTIFICATIONS

- A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. National or local agencies responsible for verification of certain aspects of the environmental protection requirements, may notify the Contractor in writing of any non-compliance with national or local requirements. After receipt of such notice from the Engineer or from the regulatory agency, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor.

1.04 IMPLEMENTATION

- A. Prior to commencement of the work, meet with the Employer, Engineer and relevant government agencies to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.
- B. Remove temporary environmental control features, when approved by the Engineer and incorporate permanent control features into the project at the earliest practicable time.
- C. Compliance with the provisions of this Section by subcontractors shall be the responsibility of the Contractor.

1.05 ENVIRONMENTAL INSPECTIONS

- A. Throughout the performance of the work required, the Contractor shall be subject to environmental inspections of his/her equipment, routine daily operations and environmental protection procedures.

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- B. Environmental inspections or tests by the Engineer shall not relieve the Contractor from his/her obligations to perform the work on time and in accordance with the requirements of the Contract Documents.
- C. At the completion of work, a joint final field inspection shall be made by the Engineer and the Contractor.
- D. No claims for delay or additional compensation will be entertained by Engineer or Employer due to Contractor non-compliance with environmental requirements specified herein or required by local authorities.

PART 2 EXECUTION

2.01 CONSTRUCTION SITE WATER POLLUTION CONTROL MEASURES

- A. Take all precautions to prevent, or reduce to a minimum, any damage to any canal, stream or surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oils or sediments, shall not be directly returned to the stream. Divert such waters through a settling basin or filter before being directed into canals, streams or surface waters.
- B. Surface channels shall be built in advance to collect and direct the surface runoff to silt removal facilities. Perimeter channels shall also be provided to prevent rainwater runoff from washing across the site. In addition, dykes or embankments for flood protection shall be positioned around critical earthwork areas.
- C. Surface runoff from areas likely to be contaminated with oil or fuel, e.g. vehicle or plant parking areas, equipment refuelling areas shall be directed to an oil separator prior to entering the general site drainage system.
- D. Stockpiles of construction materials on site shall be covered with tarpaulins or similar fabric to prevent surface erosion. Contractor shall minimize stockpiling of materials in the wet season to minimize the chance of silt laden surface runoff.
- E. Provide sufficient portable toilets or other temporary toilets approved by the Engineer at all work sites. Ban discharge of sewage into the canal or street drains. All toilets shall be regularly serviced by a specialist contractor and shall be kept clean at all times.
- F. The Contractor shall incorporate the above pollution control measures into a site environmental management plan, taking into account of the actual construction methods.

2.02 CHEMICAL MANAGEMENT

- A. The following serves as a general outline. The Contractor shall comply with manufacturer's requirements and instructions related to the proper transport, handling, storage and use of the manufacturer's chemical.
- B. Chemicals and fuel shall be stored in locked, bounded areas, which have a retention volume of [110]% of the storage capacity of the largest tank or storage container. The bounded areas shall be sealed to prevent any infiltration of precipitation, be constructed of a material that is compatible with the chemical/fuel being stored and shall not be equipped with drains to eliminate the possibility of accidental discharges.

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- C. Any substance banned in COUNTRY shall not be handled, stored or used on site.
- D. Any chemical handled, stored or used on site shall have its Material Safety Data Sheet (MSDS) prepared by the manufacturer, and a copy of all MSDSs shall be submitted to the Engineer. In case manufacturer's MSDS is not available, the Contractor shall secure – and inform the Engineer accordingly – similar information provided by an accepted authoritative agency. The MSDS or similar information shall be accessible, within a reasonable period of time after request, to the Engineer and all users and handlers of the chemical.
- E. All chemical and fuel containers shall be clearly labelled at least with the chemical name, and toxicity or safety rating.
- F. The Contractor shall formulate and implement a Spill Response Plan so that site staff is appropriately trained to minimize the environmental impacts of any emergency spill situations.

2.03 SOLID WASTE MANAGEMENT

- A. Household solid wastes (generated by workers, visitors and office) shall be removed from the site at least three times a week and disposed of at an approved location or transported away by an approved refuse hauler.
- B. Non-hazardous industrial wastes (paper, wood, packaging materials, etc.) shall be stored and removed from the site on frequent basis or as directed by Engineer.
- C. Clinical wastes (generated by Contractor's site clinic if one exists) shall be stored separately in a clearly labelled watertight and airtight container, and shall be removed from the site at least three times a week. The container used for storing these wastes shall be four times the daily generating rate of the wastes. Clinical wastes shall be disposed of at approved locations and transported by an approved waste hauler.
- D. Construction wastes and spoils shall be removed from the site at least twice a week. Their stockpiles shall be enclosed or covered and dampened to reduce wind erosion.

2.04 PROTECTION OF LAND RESOURCES

- A. Restore land resources within the project boundaries and outside the limits of permanent Work to a condition, after completion of construction, that will appear to be natural and not detract from the appearance of the Project. Confine all construction activities to areas shown on the Drawings.
- B. Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.
- C. Before beginning operations near them, protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment, dumping or other operations, by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly.

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- D. Any trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to their original condition. The Contractor shall contract the Parks and Greenery Company for the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of.
1. Treatment of scars made on trees by equipment, construction operations, or by the removal of limbs. All trimming or pruning shall be performed by the Parks and Greenery Company.
 2. Removing and replacing trees that are to remain, either within or outside established clearing limits, but are subsequently damaged by the Contractor.
- E. The locations of the Contractor's storage and other construction buildings, required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be approved by the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage and temporary facilities shall be submitted for approval of the Engineer.
- F. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least ten days prior to scheduled start of such temporary work.
1. A layout of all temporary roads, excavations, embankments and drainage to be constructed within the work area.
 2. Details of temporary road construction.
 3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.
 4. A landscaping drawing showing the proposed restoration of the area. Indicate the proposed removal of any trees and shrubs outside the limits of existing clearing area. Indicate locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged. The Drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.
- G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling and ploughing of roadways will be required to restore the area to near natural conditions, which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded, as approved by the Engineer.

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- H. All debris and excess material shall be disposed of outside wetland or floodplain areas by an approved party to an approved facility in an environmentally sound manner.

2.05 PROTECTION OF AIR QUALITY

- A. Burning at the project site for the disposal of refuse and debris shall not be permitted.
- B. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the Engineer.
- C. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Contractor shall have sufficient equipment on site at all times to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer or regulatory authority.
- D. Adopt sound materials handling practices, including but not limited to:
1. The distance between the stock piles and site boundary should be maximized so that off-site dust impacts generated from material handling are minimized.
 2. The heights from which excavated materials are dropped should be as low as practical to minimize fugitive dust from unloading.
 3. All stockpiles of aggregate or soil shall be enclosed or covered and dampened to reduce wind erosion.
- E. Control dust generation from vehicle movements through:
1. Effective water sprays shall be used to control potential dust emission sources such as unpaved areas.
 2. Vehicles with loads that have the potential to create dust while in transport shall be properly covered, with the cover secured and extended over the edges of the side and tail boards.
 3. Materials shall be dampened, if necessary, before transportation.
 4. Travelling speeds shall be controlled to reduce traffic-induced dust dispersion and re-suspension within the site from the operation of haul trucks.
 5. Wheel-washing facilities shall be provided and maintained at the exit of the site, or at a suitable location nearby, to minimize the quantity of material deposited on public roads.
- F. Adopt the following mitigation measures to the extent practicable for control of vehicle exhaust emissions:
1. Appropriately plan and schedule construction activities to minimize traffic diversions and congestion.
 2. Delivery of construction materials (raw materials, earth, spoils, pre-cast concrete sections, etc.) shall be performed during off-peak hours to avoid traffic congestion to the extent practicable.
 3. Idling of delivery trucks or other equipment shall not be permitted during periods of unloading.

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4. Low emission (diesel) construction vehicles and construction equipment should be used wherever feasible.
 5. All stationary equipment shall be located as far away as practical from receptor locations to allow dispersion of emitted pollutants.
- G. The following operational measures shall be adopted to minimize odor impacts during excavation of odorous materials on site:
1. Areas shall be excavated to a depth below water levels so as to avoid disturbed sediment being exposed to the atmosphere;
 2. The excavation working area shall be minimized to the extent practicable to minimize odor emission potential;
 3. Following the filling of storage facilities with odorous excavated materials, these shall be removed from site immediately);
 4. Odorous materials shall not be stored on the river banks, streets or in open areas;
 5. Temporary stored odorous materials shall be maintained in a moist state or covered to prevent odor emissions (by water or watertight tarpaulins);
 6. Road transport of sediment shall be in covered watertight trucks;
 7. Contractor shall appropriately route transport vehicles avoiding densely populated areas as far as practicable.
- H. The objective of odor mitigation is to achieve odor levels that do not lead to public complaints. Contractor shall also apply any additional odor mitigation methods during construction if deemed necessary by the Engineer at no additional cost.
1. Odor masking agents shall be used.
 2. Any deodorizing agents used shall be biodegradable and not impact upon water quality or affect the health and safety of site workers or the public.
- 2.06 NOISE CONTROL
- A. Make every effort to minimize noises caused by the construction operations including:
1. Use of purpose-built noise barriers (fixed and mobile), if appropriate;
 2. Adopting good equipment maintenance and ensuring that the appropriate unit is chosen for each construction task;
 3. Units not in use shall be switched off;
 4. Intrusive noisy activities shall be scheduled for periods when the number of affected persons is likely to be minimal;
 5. Provide silencing of noisy equipment, particularly diesel-engine plants;
 6. Provide efficient management of the construction program and crews to ensure that periods of noisy activities are minimized, or not grouped together in the same site area;

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2.07 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

- A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

2.08 TRAFFIC MANAGEMENT MEASURES

- A. The Contractor shall prepare a detailed Traffic Management Plan for this Contract with the aim of minimizing traffic impacts during construction to suit its working method. The Traffic Management Plan shall address all streets, alleys and ways impacted by the work of this Contract including adjacent and congruent streets, alleys and ways. The Traffic Management Plan shall be submitted for approval by the Engineer, and relevant agencies prior to implementation. The Traffic Management Plan shall:
1. Specify the length and separation of trench openings. Typically, no more than 100 m of trench should be opened at a single time. This shall be on a street-by-street basis.
 2. Specify the types of fences/walls that can be observed clearly from a distance of 100 m and that can withstand a motorcycle crash at a speed of 10 km/h.
 3. Specify the types of adequate lighting during night-time, and beacons or other kinds of warning lights operating 24 hours a day.
 4. Specify which street sections will have to be worked only at night.
 5. Specify that trenches should be reinstated as soon as work is completed, with Engineer's approval.
 6. Specify that temporary covering of open trenches by chequered steel plates to be provided during non-working periods at all road crossings and entrances to properties and business premises.
 7. Indicate alternate routing subject to the approval of relevant CLIENT agencies. Provide maps of streets and proposed alternate routes.
 8. Specify the length and duration of any lane closures subject to the approval of CLIENT City agencies.
 9. Indicate alternate routing for 4-wheel and bigger vehicles. Provide maps of streets and proposed alternate routes.
 10. To the extent possible, provide a minimum 2-meter wide access lane to residential and/or commercial areas affected by construction where a roadway has been blocked off to traffic, and take responsibility for maintaining such access lanes.
 11. To the extent possible, facilitate the passage of emergency vehicles, e.g., fire-fighting trucks and ambulances, through the worksites.
 12. Aim to conduct road opening in off-peak periods.

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13. Engage trained parties, with Engineer's approval, at no cost to the Employer, to direct traffic around the worksite when there are activities in the worksite. The traffic directing teams shall wear easily recognizable uniforms and as a minimum are equipped with whistles, batons, flashlights and raincoats. A copy of the contract signed with such traffic directing teams shall be included in the Traffic Management Plan for submission to the Engineer.
14. Ensure that road traffic will not be affected seriously by the project construction activities, and any adverse impact on traffic will be mitigated to the extent possible.
15. The Contractor shall maintain and repair traffic lanes and their associated structures as manhole covers, kerbs, etc. around the site at no cost to the Employer.

2.09 MONITORING PROGRAM

- A. No formal monitoring program shall be necessary. However, the Contractor shall establish an External Communication Procedure (e.g., per ISO 9000 or ISO 14000) for receiving and addressing public complaints, with a view to minimize health, safety, environmental and traffic impacts.

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Section VII. Form of Bid, Appendix to Bid, and Bid Security

Letter of Bid

Date: _____

ICB No.: []

Invitation for Bid No.: _____

To: _____

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB) 11 _____;
- (b) We offer to execute in conformity with the Bidding Document the following Works: _____;
- (c) Our bid price, excluding any discounts offered in item (d) below, is composed of the following components:

Description	Amount (in numbers)
(1) General Requirements in an amount of <i>[amount in words] [name of currency]</i> .	
(2) DMA Establishment in an amount of <i>[amount in words] [name of currency]</i> .	
(3) Leakage Reduction and Management Services in an amount of <i>[amount in words] [name of currency]</i> .	
(4) System Expansion Works in an amount of <i>[amount in words] [name of currency]</i> .	
(5) Emergency and Unforeseen Works in an amount of <i>[amount in words] [name of currency]</i> .	
(6) Daywork Schedule in an amount of <i>[amount in words] [name of currency]</i> .	
TOTAL = (1) + (2) + (3) + (4) + (5) + (6)	

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We hereby confirm that the total amount of Schedules 1, 2, 4, 5 and 6 does not exceed the amount of Schedule 3 (Leakage Reduction and Management Services) in accordance with the Bidding Data Sheet (BDS) 14.1 (b).

(d) The discounts offered and the methodology for their application is: _____

 _____;

(e) Our bid shall be valid for a period of _____ days from the date fixed for the bid submission deadline in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document;

(g) We, including any subcontractors or suppliers for any part of the contract, have or will have nationalities from eligible countries, in accordance with ITB-3.1;

(h) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB - 3.1 (b);

(i) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB-6.1, other than alternative offers submitted in accordance with ITB-18;

(j) We, including any of our subcontractors or suppliers for any part of the contract, have not been declared ineligible by the Bank, under the Employer’s country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;

(k) We are not a government owned entity/We are a government owned entity but meet the requirements of ITB-3.3;¹

(l) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:

Name of Recipient	Address	Reason	Amount
_____	_____	_____	_____
_____	_____	_____	_____

(If none has been paid or is to be paid, indicate “none.”)

¹ Bidder to use as appropriate

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- (m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (n) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (o) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Name _____ In the capacity of _____

Signed _____

Duly authorized to sign the bid for and on behalf of _____

Dated on _____ day of _____, _____

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Appendix to Bid

Schedule of Adjustment Data

[In Tables A, B, and C, below, the Bidder shall (a) indicate its amount of local currency payment, (b) indicate its proposed source and base values of indices for the different foreign currency elements of cost, (c) derive its proposed weightings for local and foreign currency payment, and (d) list the exchange rates used in the currency conversion. In the case of very large and/or complex contracts, it may be necessary to specify several families of price adjustment formulae corresponding to the different works involved.]

Table A. Local Currency

Index code	Index description	Source of index	Base value and date	Bidder's related currency amount	Bidder's proposed weighting
<i>I</i>	<i>The Consumer Price Index for COUNTRY</i>	<i>The General Statistics Office of COUNTRY (WEBSITE)</i>			
	Nonadjustable	—	—	—	A: [0.15] B: _____ C: _____ D: _____ E: _____
Total					1.00

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Table B. Foreign Currency

State type: [If the Bidder wishes to quote in more than one foreign currency, this table should be repeated for each foreign currency.]

Index code	Index description	Source of index	Base value and date	Bidder's related source currency in type/amount	Equivalent in FC1	Bidder's proposed weighting
	Nonadjustable	—	—	—		A: <u>[0.15]</u> B: _____ C: _____ D: _____ E: _____
Total						1.00

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

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Table: Alternative B

*To be used only with Alternative B - Prices directly quoted in the currencies of payment.
(Clause ITB 15.1)*

Summary of currencies of the bid for _____ [insert name of Section of the Works]

Name of currency	Amounts payable
Local currency: _____	
Foreign currency #1: _____	
Foreign currency #2: _____	
Foreign currency #3: _____	

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Section VII- Page 7

Form of Bid Security

(Bank Guarantee)

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

BID GUARANTEE No.: _____

We have been informed that _____ [name of the Bidder] (hereinafter called "the Bidder") has submitted to you its bid dated _____ (hereinafter called "the Bid") for the execution of _____ [name of contract] under Invitation for Bids No. _____ ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

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

- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
- (b) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement or (ii) fails or refuses to furnish the performance security, in accordance with the ITB.

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

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

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s)]

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

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Bill of Quantities

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Section VIII. Bill of Quantities

To be provided in a separate excel file

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Section IX - Page 1

Section IX. Form of Agreement, Forms of Performance Security and Bank Guarantee for Advance Payment

NOTES ON AGREEMENT, PERFORMANCE AND ADVANCE PAYMENT SECURITIES

Samples of acceptable forms of Agreement, Performance and Advance Payment Securities are annexed.⁹ Bidders should not complete the Performance and Advance Payment Security forms at this time. Only the successful Bidder will be required to provide Performance and Advance Payment Securities in accordance with one of the forms or in a similar form acceptable to the Employer.

⁹ Employers should state in the Bidding and Contract Data the acceptability of one or more of the alternatives and should include in the bidding documents either Alternative Form 1 or 2 of Performance Bank Guarantee, and/or Alternative 3 of the Performance Bond, according to the Employer's preference.

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NOTES ON STANDARD FORM OF AGREEMENT

The Agreement should incorporate any corrections or modifications to the Bid resulting from corrections of errors (Instructions to Bidders, Clause 30), price adjustment during the evaluation process (Instructions to Bidders Sub-Clause 14.3 or Clause 48 of the General Conditions of Contract), selection of an alternative offer (Instructions to Bidders Clause 18), or any other mutually-agreeable changes allowed for in the Conditions of Contract, such as changes in key personnel, subcontractors, scheduling, and the like.

This Agreement, made the [day] day of [month], [year] between [name and address of Employer] (hereinafter called "the Employer") and [name and address of Contractor] (hereinafter called "the Contractor") of the other part.

Whereas the Employer is desirous that the Contractor execute [name and identification number of Contract] (hereinafter called "the Works") and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and Services and the remedying of any defects therein.

Now this Agreement witnessed as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Services and Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Services and Works and the remedying of defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____

was hereunto affixed in the presence of: _____

Signed, Sealed, and Delivered by the said _____

in the presence of: _____

Binding Signature of Employer _____

Binding Signature of Contractor _____

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

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FORM OF PERFORMANCE SECURITY: PERFORMANCE BANK GUARANTEE

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

PERFORMANCE GUARANTEE No.: _____

We have been informed that [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. [reference number of the contract] dated with you, for the execution of [name of contract and brief description of Works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [amount in figures] (_____) [amount in words],¹⁰ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire no later than twenty-eight days from the date of issuance of the Taking-Over Certificate, calculated based on a copy of such Certificate which shall be provided to us, or on the ___ day of _____, 2____,¹¹ whichever occurs first. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458, except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.

[signature(s)]

¹⁰ The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Employer.

¹¹ Insert the date twenty-eight days after the expected completion date. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

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ANNEX B FORM: BANK GUARANTEE FOR ADVANCE PAYMENT

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. [reference number of the contract] dated _____ with you, for the execution of [name of contract and brief description of Works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum [amount in figures] (_____) [amount in words] is to be made against an advance payment guarantee.

At the request of the Contractor, we [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [amount in figures] (_____) [amount in words]¹² upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number _____ at _____ [name and address of Bank].

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the ___ day of ___, 2___,¹³ whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s)]

¹² The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.

¹³ Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Section X - Page 1

Section X. Drawings

A set of following drawings will be provided to the Bidders along with the Bidding Documents:

[]

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WATER – PERFORMANCE BASED LEAKAGE REDUCTION CONTRACT

Section XI - Page 1

Section XI. Disputes Settlement Procedure

DISPUTES REVIEW BOARD'S RULES AND PROCEDURES

1. Except for providing the services required hereunder, the Board Members shall not give any advice to either party concerning conduct of the Works. The Board Members:
 - (a) shall have no financial interest in any party to the Contract, or a financial interest in the Contract, except for payment for services on the Board;
 - (b) shall have had no previous employment by, or financial ties to, any party to the Contract, except for fee-based consulting services on other projects, all of which must be disclosed in writing to both parties prior to appointment to the Board;
 - (c) shall have disclosed in writing to both parties prior to appointment to the Board any and all recent or close professional or personal relationships with any director, officer, or employee of any party to the Contract, and any and all prior involvement in the project to which the Contract relates;
 - (d) shall not, while a Board Member, be employed whether as a consultant or otherwise by either party to the Contract, except as a Board Member, without the prior consent of the parties and the other Board Members;
 - (e) shall not, while a Board Member, engage in discussion or make any agreement with any party to the Contract, regarding employment whether as a consultant or otherwise either after the Contract is completed or after service as a Board Member is completed;
 - (f) shall be and remain impartial and independent of the parties and shall disclose in writing to the Employer, the Contractor, and one another any fact or circumstance that might be such as to cause either the Employer or the Contractor to question the continued existence of the impartiality and independence required of Board Members; and
 - (g) shall be fluent in the language of the Contract.
2. Except for its participation in the Board's activities as provided in the Contract and in this Agreement none of the Employer, the Contractor, shall solicit advice or consultation from the Board or the Board Members on matters dealing with the conduct of the Works.
3. The Contractor shall
 - (a) Furnish to each Board Member one copy of all documents that the Board may request including Contract documents, progress reports, variation orders, and other documents pertinent to the performance of the Contract.
 - (b) In cooperation with the Employer, coordinate the Site visits of the Board, including conference facilities, and secretarial and copying services.
4. The Board shall begin its activities following the signing of a Board Member's Declaration of Acceptance by all three Board Members, and it shall terminate these activities as set forth below:
 - (a) The Board shall terminate its regular activities when either (i) the Defects Liability Period referred to in Sub-Clause 41.2 (or, if there are more than one, the Defects Liability Period expiring last) has expired, or (ii) the Employer has expelled the Contractor from the Site

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pursuant to Sub-Clause 59.1, and when, in either case, the Board has communicated to the parties its Recommendations on all disputes previously referred to it.

- (b) Once the Board has terminated its regular activities as provided by the previous paragraph, the Board shall remain available to process any dispute referred to it by either party. In case of such a referral, Board Members shall receive payments as provided in paragraphs 7 (a) (ii), (iii), and (iv).

5. Board Members shall not assign or subcontract any of their work under these Rules and Procedures. However, the Board may in its discretion decide to seek independent expert advice on a particular specialized issue to assist in reaching a Recommendation, and the cost of obtaining any such expert opinion(s) shall be shared equally by the Employer and the Contractor in accordance with the procedure specified in paragraph 7 (d) below.

6. The Board Members are independent Contractors and not employees or agents of either the Employer or the Contractor.

7. Payments to the Board Members for their services shall be governed by the following provisions:

- (a) Each Board Member will receive payments as follows:
- (i) A retainer fee per calendar month equivalent to two times the daily fee established from time to time for arbitrators under the Administrative and Financial Regulations of the International Centre for Settlement of Investment Disputes (the ICSID Arbitrator's Daily Fee), or such other retainer as the Employer and Contractor may agree in writing. This retainer shall be considered as payment in full for:
- (A) Being available, on seven days' notice, for all hearings, Site visits, and other meetings of the Board.
- (B) Being conversant with all project developments and maintaining relevant files.
- (C) All office and overhead expenses such as secretarial services, photocopying, and office supplies (but not including telephone calls, faxes, and telexes) incurred in connection with the duties as a Board Member.
- (D) All services performed hereunder except those performed during the days referred to in paragraph (ii) below.
- (ii) A daily fee equivalent to the ICSID Arbitrator's Daily Fee, or such other daily fee as the Employer and Contractor may agree in writing. This daily fee shall only be payable in respect of the following days and shall be considered as payment in full for:
- (A) Each day up to a maximum of two days of travel time in each direction for the journey between the Board Member's home and the Site or other location of a Board meeting.
- (B) Each day on Site or other locations of a Board meeting.
- (iii) Expenses. In addition to the above, all reasonable and necessary travel expenses (including less than first-class air fare, subsistence, and other direct travel

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expenses) as well as the cost of telephone calls, faxes, and telexes incurred in connection with the duties as Board Member shall be reimbursed against invoices. Receipts for all expenses in excess of [AMOUNT AND CURRENCY] shall be provided.

- (iv) Reimbursement of any taxes that may be levied in the country of the Site on payments made to the Board Member (other than a national or permanent resident of the country of the Site) pursuant to this paragraph 8.
 - (b) Escalation. The retainer and fees shall remain fixed for the period of each Board Member's term.
 - (c) Payments to the Board Members shall be shared equally by the Employer and the Contractor. The Contractor shall pay Members' invoices within 30 calendar days after receipt of such invoices and shall invoice the Employer (through the monthly statements to be submitted in accordance with Clause 49 of the General Conditions of Contract) for one-half of the amounts of such invoices. The Employer shall pay such Contractor's invoices within the time period specified in the Construction Contract for other payments to the Contractor by the Employer.
 - (d) Failure of either the Employer or the Contractor to make payment in accordance with this Agreement shall constitute an event of default under the Contract, entitling the non-defaulting party to take the measures set forth in the Contract.
 - (e) Notwithstanding such event of default, and without waiver of rights therefrom, in the event that either the Employer or the Contractor fails to make payment in accordance with these Rules and Procedures, the other party may pay whatever amount may be required to finance the operation of the Board. The party making such payments, in addition to all other rights arising from such default, shall be entitled to reimbursement of all sums paid in excess of one-half of the amount required to maintain operation of the Board, plus all costs of obtaining such sums.
8. Board Site Visits
- (a) The Board shall visit the Site and meet with representatives of the Employer and the Contractor at regular intervals, at times of critical construction events, at the written request of either party, and in any case not less than two times in any period of 12 months. The timing of Site visits shall be as agreed among the Employer, the Contractor, and the Board, but failing agreement shall be fixed by the Board.
 - (b) Site visits shall include an informal discussion of the status of the Works and Services, an inspection of the Works and Services, and the review of any Requests for Recommendation made in accordance with paragraph 10 below. Site visits shall be attended by personnel from the Employer and the Contractor.
 - (c) At the conclusion of each Site visit, the Board shall prepare a report covering its activities during the visit and shall send copies to the parties.

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9. Procedure for Dispute Referral to the Board:
- (a) If either party objects to any action or inaction of the other party, the objecting party may file a written Notice of Dispute to the other party stating that it is given pursuant to Clause 6 and stating clearly and in detail the basis of the dispute.
 - (b) The party receiving the Notice of Dispute will consider it and respond in writing within 14 days after receipt.
 - (c) This response shall be final and conclusive on the subject, unless a written appeal to the response is filed with the responding party within 7 days after receiving the response. Both parties are encouraged to pursue the matter further to attempt to amicably settle the dispute.
 - (d) When it appears that the dispute cannot be resolved without the assistance of the Board, or if the party receiving the Notice of Dispute fails to provide a written response within 14 days after receipt of such Notice, either party may refer the dispute to the Board by written Request for Recommendation to the Board. The Request shall be addressed to the Chairman of the Board, with copies to the other Board Members, the other party and it shall state that it is made pursuant to Clause 6.
 - (e) The Request for Recommendation shall state clearly and in full detail the specific issues of the dispute to be considered by the Board.
 - (f) When a dispute is referred to the Board, and the Board is satisfied that the dispute requires the Board's assistance, the Board shall decide when to conduct a hearing on the dispute. The Board may request that written documentation and arguments from both parties be submitted to each Board Member before the hearing begins. The parties shall submit insofar as possible agreed statements of the relevant facts.
 - (g) During the hearing, the Contractor and the Employer shall each have ample opportunity to be heard and to offer evidence. The Board's Recommendations for resolution of the dispute will be given in writing to the Employer and the Contractor as soon as possible, and in any event not more than 56 days after receipt by the Chairman of the Board of the written Request for Recommendation.
10. Conduct of Hearings
- (a) Normally hearings will be conducted at the Site, but any location that would be more convenient and still provide all required facilities and access to necessary documentation may be utilized by the Board. Private sessions of the Board may be held at any cost-effective location convenient to the Board.
 - (b) The Employer and the Contractor shall be given the opportunity to have representatives at all hearings.
 - (c) During the hearings, no Board Member shall express any opinion concerning the merit of the respective arguments of the parties.
 - (d) After the hearings are concluded, the Board shall meet privately to formulate its Recommendations. All Board deliberation shall be conducted in private, with all

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Members' individual views kept strictly confidential. The Board's Recommendations, together with an explanation of its reasoning, shall be submitted in writing to both parties. The Recommendations shall be based on the pertinent Contract provisions, applicable laws and regulations, and the facts and circumstances involved in the dispute.

- (e) The Board shall make every effort to reach a unanimous Recommendation. If this proves impossible, the majority shall decide, and the dissenting Member may prepare a written minority report for submission to both parties.
11. In all procedural matters, including the furnishing of written documents and arguments relating to disputes, Site visits, and conduct of hearings, the Board shall have full and final authority. If a unanimous decision on any such matter proves impossible, the majority shall decide.
12. After having been selected and, where necessary, approved, each Board Member shall sign two copies of the following declaration and make one copy available each to the Employer and to the Contractor:

This document has been prepared for the purposes of the **PPP IN INFRASTRUCTURE RESOURCE CENTER FOR CONTRACTS, LAWS AND REGULATIONS (PPPIRC) website**. It is a sample document FOR REFERENCE PURPOSES ONLY and SHOULD NOT BE used as a "model". The inclusion of any legal materials on the PPPIRC website does not mean that they are in any way approved, endorsed or recommended by the World Bank Group or its affiliates. Legal advice should be sought to determine whether a particular legal document is appropriate for any given project, and how the specific terms of the document should be adapted to fit the circumstances of that project.

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BOARD MEMBER'S DECLARATION OF ACCEPTANCE

WHEREAS

- (a) a Performance-Based Management and Maintenance of Roads Contract (the Contract) for the *[name of project]* project has been signed on *[fill in date]* between *[name of Employer]* (the Employer) and *[name of Contractor]* (the Contractor);
- (b) Clause 6 of the General Conditions of Contract provides for the establishment and operation of a Disputes Review Board (the Board);
- (c) the undersigned has been selected (and where required, approved) to serve as a Board Member on said Board;

NOW THEREFORE, the undersigned Board Member hereby declares as follows:

1. I accept the selection as a Board Member and agree to serve on the Board and to be bound by the provisions of Clause 6 of the General Conditions of Contract and the Disputes Review Board's Rules and Procedures attached to the Conditions of Contract.
2. With respect to paragraph 1 of said Disputes Review Board's Rules and Procedures, I declare
 - (a) that I have no financial interest of the kind referred to in subparagraph (a);
 - (b) that I have had no previous employment nor financial ties of the kind referred to in subparagraph (b); and
 - (c) that I have made to both parties any disclosures that may be required by sub-paragraphs (b) and (c).

BOARD MEMBER

_____ *[print name of Board Member]*

Date: _____

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Section XII. Eligible Countries

Eligibility for the Provision of Goods, Works and Services in Bank-Financed Procurement

1. In accordance with Para 1.8 of the Guidelines: Procurement under IBRD Loans and IDA Credits, dated May 2004, the Bank permits firms and individuals from all countries to offer goods, works and services for Bank-financed projects. As an exception, firms of a Country or goods manufactured in a Country may be excluded if:

Para 1.8 (a) (i): as a matter of law or official regulation, the Borrower's Country prohibits commercial relations with that Country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of the Goods or Works required, or

Para 1.8 (a) (ii): by an Act of Compliance with a Decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any import of goods from that Country or any payments to persons or entities in that Country.

2. For the information of borrowers and bidders, at the present time firms, goods and services from the following countries are excluded from this bidding:

- (a) With reference to paragraph 1.8 (a) (i) of the Guidelines:

- (b) With reference to paragraph 1.8 (a) (ii) of the Guidelines:
