



**Ministry of Environment**  
Republic of Maldives

**REQUEST FOR PROPOSAL**

**Consultancy Services to assess groundwater resources and design of aquifer recharge systems in selected 12 islands of Maldives**

**“Supporting Vulnerable Communities in Maldives to Manage Climate Change-induced Water Shortages Project”**

**Issued on 25<sup>th</sup> March 2021**

**Issued By:**  
GCF Project Management Unit  
Water and Sanitation Department  
Ministry of Environment

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## 1 SCHEDULE OF CRITICAL DATES

ACTIVITY	ACTION DATE
Advertised Date	25 <sup>th</sup> March 2021
Registration Deadline	Before 1200hrs on 30th March 2021
Bid Clarification Deadline	30 <sup>th</sup> March 2021 before 1400hrs
Deadline to submit proposals	1100hrs 6 <sup>th</sup> April 2021

## 2 SUBMISSION REQUIREMENTS

Interested parties **shall submit** all the Forms listed under **Sections 6 (TECHNICAL PROPOSAL - STANDARD FORMS)** and **Section 7 (FINANCIAL PROPOSAL - STANDARD FORMS)**.

Please CHECK in the BOXES to confirm the submission of the required Forms.

- 1. Proposal Submission Form, Consultant's Information form, and Joint Venture Information Form (Form Tech-1A, 1B & 1C)
- 2. Consultant's Organisation, summary of contract commitments of the firm, General Experience of the firm and Specific Experience of the firm (Form Tech -2A,2B, 2C & 2D)
- 3. Approach, Methodology and Work Plan (Form Tech -3)
- 4. Team Composition & Task Assignments (Form Tech -4)
- 5. Curriculum Vitae (CV) for proposed Professional Staff (Form Tech -5)
- 6. Work Schedule (Form Tech -6)
- 7. Financial Proposal Submission Form (Form Fin 1)
- 8. Financial Proposal Summary Form (Form Fin 2)
- 9. Bid Security (Form Fin 3)
- 10. If more than one party wishes to show interest as a JV, Joint Venture or Association Agreement between the parties needs to be provided.

Please CHECK in the BOXES to confirm the submission of the required related documents.

- 11. Company profile of the consultancy firm
- 12. Company registration certificate of the consultancy firm
- 13. Organization chart of the consultancy firm
- 14. Copy of the National Identity Card/Passport, Attested copies of Educational Certificates (if needed as per selection criteria in TOR) of Proposed members in Form Tech-5
- 15. Stamped/signed project completion letters for ALL the projects Listed under FORM TECH-2: Proponent’s Organization and Experience Form. (Cross refer to Project# in the Form)
- 16. GST Registration Certificate
- 17. Provide links or copies of the samples of relevant pieces completed to date (Cross refer to Project# in the FORM TECH-2: Proponent’s Organization and Experience Forms).

### 3 LETTER OF INVITATION

#### **Subjects: Consultancy Services to Assess Groundwater Resources and Design of Aquifer Recharge Systems in Selected 12 Islands of Maldives**

The Government of Maldives represented by the Ministry of Environment (ME) has received funding from the Green Climate Fund (GCF) for the project “Supporting Vulnerable Communities in Maldives to Manage Climate Change-Induced Water Shortages” and intends to apply part of the proceeds towards; procuring the services of a Consultancy Firm for “ Consultancy Services for Assessing Groundwater Resource and Design of Aquifer recharge systems to ensure improved aquifer recharging and protection in selected islands of Maldives”. under the contract package names below

Groundwater Assessment and Design of Aquifer Recharge Systems in HDh. Finey, HDh. Hirimaradhoo, HDh. Kurinbee, HDh. Neykurendhoo, N. Lhohi and N. Magoodhoo, Sh. Bilehfahi, Sh. Feevah, Sh. Feydhoo, Sh. Lhaimagu, Sh. Narudhoo and Sh. Noomara

The main objective of the consultancy is to undertake in depth assessment of the groundwater quality and recharge rates and design managed aquifer recharge systems in order to ensure improved aquifer recharging and protection in the selected islands.

A detailed Terms of Reference (TOR) for each of the above components and Request for Proposal (RFP) for the consulting services will be attached to the gazette advertisement and also made downloadable on the Ministry’s website [www.environment.gov.mv](http://www.environment.gov.mv). Interested consultation Firms may obtain further information via mail to [proc.gcfws@environment.gov.mv](mailto:proc.gcfws@environment.gov.mv).

The Bidder shall be registered to submit the proposal by submitting ‘Bidders’ Registration Form’ to the email address [proc.gcfws@environment.gov.mv](mailto:proc.gcfws@environment.gov.mv) **Before 1200hrs on 30th March 2021** . Only registered bidders will be qualified to submit a bid proposal. The form will be attached to this gazette advertisement.

Proposals shall be delivered in a sealed envelope, bearing the name of the project “Consultancy Services for Assessing Groundwater Resource and Design of Aquifer recharge systems to ensure improved aquifer recharging and protection in selected 12 islands of Maldives”, bid opening time and date, the address the bid is submitted to (as in the RFP), and the bidders company name, to the

Ministry of Environment at the address specified in the RFP. Proposals shall be valid for a period of 90 days from the date of Opening. Electronic submissions are not allowed.

Bids should be submitted on **Maldivian time 1100hrs 6th April 2021** (Only bids submitted at this time will be eligible to proceed to evaluation). The bids will be opened at **Maldivian time 1100hrs 6th April 2021** . Any late bids will be rejected.

**GCF Project Management Unit  
Water and Sanitation Department  
Ministry of Environment,  
Green Building, Handhuvaree Hingun,  
Maafannu, Male', 20392,  
Republic of Maldives  
Tel. (960)-3018-395/396  
Email: [proc.gcfws@environment.gov.mv](mailto:proc.gcfws@environment.gov.mv)**

## 4 INSTRUCTIONS TO CONSULTANTS

### 4.1 Introduction

- a) The Client named in the **Data Sheet** will select a Consultancy Firm from those Firms that submit their proposals for this request.
- b) Interested parties are invited to submit Technical Proposal and a Financial Proposal for the contract named in the **Data Sheet**. The Proposal will be the basis for contract negotiations and ultimately for a signed Contract with the selected Party.
- c) The party as a Lead Consultancy firm can propose **1 (one) Associate Consultancy firms** to partner with for the consultancy. The Lead and Associate Consultants (if any) will be evaluated as according to evaluation criteria set in the **Data Sheet**.
- d) The Client will select a Consultancy Firm from those who show interest to this call for proposals, in accordance with the method of selection specified in the **Data Sheet**.
- e) As a direct response to this document, interested parties must provide their detailed proposals for the “Consultancy Services for Assessing Groundwater Resource and Design of Aquifer recharge systems to ensure improved aquifer recharging and protection in selected 12 islands of Maldives”. The standards and other statements on such provision and legislative compliance made by the parties as part of their proposals will form a binding part of the final contract document.
- f) The Applicants shall bear all costs associated with the preparation and submission of their proposals and contract negotiation. The Client is not bound to accept any proposal, and reserves the right to annul the selection process at any time prior to Contract award, without thereby incurring any liability to the Applicants.
- g) The Client reserves the right to accept or reject any Proposal and to terminate the tendering process without awarding a contract. The parties should be aware that it is unlikely that the Client will be in a position to go forward with any proposals that fails to meet the statutory and essential requirements.

### 4.2 Conflict of interest

- a) A Party (including its Personnel) that has a business or family relationship with a member of the Client’s staff who is directly or indirectly involved in any part of (i) the preparation of the Schedule of requirements, (ii) the selection process, or (iii) supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to the Government throughout the selection process and the execution of the Contract.

- b) The Consultants have an obligation to disclose any situation of actual or potential conflict that impacts their capacity to serve the best interest of their Client, or that may reasonably be perceived as having this effect. Failure to disclose said situations may lead to the disqualification of the Consultants or the termination of its Contract.

### 4.3 Fraud and Corruption

The Client requires that all parties including Consultants and their agents (whether declared or not), personnel, sub-contractors, sub-Consultants, service providers and suppliers, observe the highest standard of ethics during the selection and execution its contracts. In pursuance of this policy, the Client:

- a) defines, for the purposes of this provision, the terms set forth below as follows:
- i. “corrupt practice” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - ii. “fraudulent practice” is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
  - iii. “collusive practices” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - iv. “coercive practices” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party.
  - v. “obstructive practice” is
    - deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
    - acts intended to materially impede the exercise of the relevant government authorities’ inspection and audit rights.
- b) will reject a proposal for award if it determines that the firm recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- c) will cancel the portion of the contract if it determines at any time that representatives of the Client or of a beneficiary were engaged in corrupt, fraudulent, collusive, or coercive practices during the selection process or the execution of that contract, without the Consultants having taken timely and appropriate action satisfactory to the Client to address such practices when they occur; and



- d) will take action against any Party or an individual at any time, in accordance with rules and regulations including by publicly declaring such Parties or individual ineligible, either indefinitely or for a stated period of time.

#### **4.4 Proposal Validity**

- a) The Data Sheet indicates how long the Proposals must remain valid after the submission date. The Client will make its best effort to complete negotiations within this period. Should the need arise; however, the Client may request to extend the validity period of proposals. The Parties who agree to such extension shall confirm that they maintain the availability of the Professional staff nominated in the Proposal, or in their confirmation of extension of validity of the Proposal, The Applicants could submit new staff in replacement, who would be considered in the final evaluation for contract award. Applicants who do not agree have the right to refuse to extend the validity of their Proposals.
- b) Bid Security shall also be extended for a corresponding period. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid.
- c) In the case of fixed price contracts, if the award is delayed by a period exceeding ninety (90) days beyond the expiry of the initial Bid validity, the Contract price shall be adjusted as specified in the request for extension. Bid evaluation shall be based on the Bid Price without taking into consideration the above correction.

#### **4.5 Language of Proposal**

The proposal documents must be in written English.

#### **4.6 Preparation of Proposals**

- a) The Proposal (see para. 1.2), as well as all related correspondence exchanged by the Consultants and the Client, shall be written in the language (s) specified in the RFP.
- b) In preparing their Proposal, Applicants are expected to examine in detail the documents comprising the RFP. Material deficiencies in providing the information requested may result in rejection of the Proposal.
- c) Alternative professional staff shall not be proposed, and only one curriculum vitae (CV) may be submitted for each position.

#### **4.7 Technical Proposal Format and Content**

The Technical Proposal shall provide the information indicated in the following paras from (a) to (f) using the attached Standard Forms (Section 6. Technical Proposal).

- a) A brief description of the Consultants’ organization and an outline of recent experience of the Proponents and in the case of joint venture, for each partner, on assignments of a similar nature, are required in FORM TECH 2A & 2B of Section 6. For each assignment, the outline should indicate the names of Sub-Consultants/ Professional staff who participated, duration of the assignment, contract amount, and Consultant’s involvement. Information should be provided only for those assignments for which the Consultants was legally contracted by the client as a corporation or as one of the major consultancy firm. Assignments completed by individual Professional staff working privately or through other organisations cannot be claimed as the experience of the Firm, or that of the Consultant’s associates, but can be claimed by the Professional staff themselves in their CVs. Consultants should be prepared to substantiate the claimed experience if so requested by the Client.
- b) A description of the approach, methodology and work plan for performing the assignment covering the following subjects: technical approach and methodology, equipment that will be used, work plan, and organization and staffing schedule. Guidance on the content of this section of the Technical Proposals is provided under FORM TECH 3 Section 6. The work plan should be consistent with the Work Schedule (FORM TECH 6 of Section 6) which will show in the form of a bar chart depicting the timing proposed for each activity.
- c) The list of the proposed professional staff team by area of expertise, the position that would be assigned to each staff team member, and their tasks (FORM TECH 4 of Section 6).
- d) CV’s of the professional staff signed by the staff themselves or by the authorized representative of the professional staff (FORM TECH-5 of Section 6).
- e) The Technical Proposal shall not include any financial information. A Technical Proposal containing financial information may be declared non-responsive.

#### **4.8 Financial Proposal Format and Content**

- a) Financial Proposal submitted shall include the total cost specified in the TOR (FORM FIN 1) and the total amount of financial proposal shall be inclusive of Goods and Service Tax (GST).
- b) Financial Proposal submitted shall include the breakdown of cost for each of the deliverables (FORM FIN 2)
- c) Failure to submit the FORM FIN 1&2 will lead to the disqualification of the proposal submitted by the Proponent.

#### **4.9 Clarification and Amendment of RFP Documents**

- a) During the RFP process, questions or clarifications regarding this RFP document must be requested in writing to the person and address stated in the **Data Sheet**. Requests for clarifications need to be submitted latest by the date and time provided in the **Data Sheet**.
- b) Any additional documentation issued by the Client during the tender process shall be deemed to form part of this RFP and shall supersede any part of the RFP where indicated. The Client may also exercise the option to extend the tendering period and/or postpone the proposal submission date in the event that subsequent documentation is issued.

#### **4.10 Communications**

Except as provided in the preceding section relating to questions about this RFP, no parties shall contact any officers, employees, or team members of Client with respect to this RFP. Any oral communication with a Client employee concerning this RFP is not binding on the Client and shall in no way alter any specifications, term or condition of this RFP or any contract documents.

#### **4.11 Submission, Receipt, and Opening of Proposals**

- a) The original proposal (Technical Proposal and Financial Proposal) shall contain no interlineations or overwriting, except as necessary to correct errors made by the Applicants themselves. The person who signed the proposal must initial such corrections.
- b) An authorized representative of the Applicant shall initial all pages of the original Technical and Financial Proposals. The authorization shall be in the form of a written power of attorney accompanying the Proposal or in any other form demonstrating that the representative has been duly authorized to sign on behalf of the Firm.
- c) Applicants shall submit a “Compliance Statement” stating that the offer is made in accordance with the Request for Proposal. Applicants who offer additional or alternative conditions *if applicable* shall clearly state those in their proposals.
- d) The technical proposal and financial proposal must be submitted in a single sealed envelope with one (1) printed copy to the address indicated in the Data Sheet. The proposal shall be placed in a sealed envelope which shall bear the submission address, reference number and be clearly marked “Do Not Open, except in the Presence of the Official Appointed”. The Client shall not be responsible for misplacement, losing or premature opening if the outer envelope is not sealed and/or marked as stipulated. This circumstance may be case for Proposal rejection.
- e) The Proposals must be sent to the address indicated in the **Data Sheet** and received by the Client no later than the date specified in the **Data Sheet**, or any extension to this date. Any proposal received by the Client after the deadline for submission shall be returned unopened.

#### 4.12 Evaluation of proposals

- a) From the time the Proposals are opened to the time the Contract is awarded, the Applicants should not contact the Client on any matter related to its Technical and/or Financial Proposal. Any effort by Applicants to influence the Client in the examination, evaluation, ranking of Proposals, and recommendation for award of Contract may result in the rejection of the Consultants' Proposal.
- b) The Proposals shall be opened publicly in the presence of the Consultants' representatives who choose to attend. These Financial Proposals shall be then referred, and the total prices read aloud and recorded. Copy of the record shall be sent to all submitted firms.
- c) The evaluation committee shall evaluate the Technical Proposals on the basis of their responsiveness to the Technical Requirements, applying the evaluation criteria, sub-criteria, and point system specified in the **Data Sheet**. Each responsive Proposal will be given a technical score (St). A Proposal shall be rejected at this stage if it does not respond to important aspects of the RFP, and particularly the Technical Requirements or if it fails to achieve the minimum technical score indicated in the evaluation criteria specified in the **Data Sheet**.
- d) To be eligible for this assignment the consultants must clearly show their capacity to accomplish the work in the required time frame with the proposed project team by showing the adequacy of staff selected and their current workload.
- e) After the technical evaluation is completed, the bidders who are not qualified for technical evaluation will be disqualified for the financial evaluation.
- f) The Applicant is **REQUIRED** to submit Financial Proposal for the bid, using for this purpose the Financial Proposal Submission FORM FIN 1&2.
- g) The Evaluation Committee will correct any computational errors. When correcting computational errors, in case of discrepancy between a partial amount and the total amount, or between word and figures the formers will prevail.
- h) The **highest** evaluated Financial Proposal (Fm) will be given the maximum financial score (Sf) of 100 points. The financial scores (Sf) of the other Financial Proposals will be computed as indicated in the **Data Sheet**. Proposals will be ranked according to their combined technical (St) and financial (Sf) scores using the weights (T = the weight given to the Technical Proposal; P = the weight given to the Financial Proposal; T + P = 1) indicated in the Evaluation Criteria:  $S = St \times T\% + Sf \times P\%$ . The Party achieving the highest combined technical and financial score for the Proposal will be invited for negotiations.

#### 4.13 Damages

- a) The Client may claim damages in respect of any direct loss that can be reasonably attributed to delays, defects or other breaches of contract on the part of the Consultant, unless the Consultant demonstrates that the Consultant did not cause the breach of contract or the reason for the breach of contract.
- b) Liquidated damages shall be the only damages due from the Consultant for such default, other than in the event of termination by Employer under the contract prior to completion of the works. These damages shall not relieve the consultant from their obligation to complete the works, or from any other duties, obligations or responsibilities which they may have under the Contract.
- c) If the agreed delivery date or other time limit in the delivery schedule in respect of which the parties have stipulated is not complied with, and this is not caused by force majeure or circumstances related to the Client, there is a delay on the part of the Consultant that triggers liquidated damages.
- d) The liquidated damages shall accumulate automatically. The liquidated damages amount and the maximum delay damages will be calculated on the basis specified in the **Data Sheet**.
- e) The Client shall not have the right to terminate the Agreement for breach for as long as the liquidated damages continue to accumulate. However, this time restriction shall not apply in the case of wilful misconduct or gross negligence on the part of the Consultant or anyone for whom it is responsible.
- f) If only parts of the agreed deliverables are delayed, the Consultant may request a reduction in the liquidated damages proportional to the ability of the Client to utilise the part of the deliverables that has been delivered.

## 5 DATA SHEET

<p><b>5.1.a</b></p>	<p><b>Name of the Client:</b>                  Ministry of Environment                  Green Building, Handhuvaree hingun,                  Maafannu, Male’, 20392,                  Republic of Maldives</p>
<p><b>5.1.b</b></p>	<p><b><i>Financial Proposal to be submitted together with Technical Proposal in a single envelope on the same day and time specified.</i></b></p> <p><i>Please write name of the Consultancy assignment and other required details as per clause 4.11 on the envelopes.</i></p> <p>Name of the assignment is: “Consultancy Services for Assessing Groundwater Resource and Design of Aquifer recharge systems to ensure improved aquifer recharging and protection in selected 12 islands of Maldives”.</p>
<p><b>5.2 Validity</b></p>	<p>Proposals must remain valid up to 90 days after the submission date.                  Bid Security Validity up to 90 days after the submission date                  Bid Security MVR 16,000</p>
<p><b>5.3 Clarifications of RFP Documents</b></p>	<p>Interested consultants may obtain further information/clarifications no later than <b>30<sup>th</sup> March 2021, 1400hrs</b> before the submission date.</p> <p>GCF Project Management Unit                  Water and Sanitation Department                  Ministry of Environment,                  Green Building, Handhuvaree Hingun,                  Maafannu, Male’, 20392,                  Republic of Maldives.                  Tel. (960)-3018-388/399                  Email: proc.gcfws@environment.gov.mv</p>
<p><b>5.5 Submission, Receipt, and Opening of Proposals</b></p>	<p>The Proposal submission address is:</p> <p>GCF Project Management Unit                  Water and Sanitation Department                  Ministry of Environment,                  Green Building, Handhuvaree Hingun,                  Maafannu, Male’, 20392,</p>

	<p>Republic of Maldives.</p> <p>The proposals are expected to be submitted to the address on local time <b>1100hrs 6th April 2021</b> . Only bids submitted at this time will be eligible to proceed to evaluation and <b>Late bids will be rejected.</b></p> <p><b>Interested parties should register their interest by email no later than Before 1200hrs on 30th March 2021 . Only those parties who register their interest will be allowed to participate in the bid.</b></p> <p><b>Proposal of additional or alternative conditions to RFP is not allowable</b></p>										
<p><b>5.6 Evaluation of Proposals</b></p>	<p><b>Evaluation will be done <u>separately on lot basis.</u></b></p> <p><b>Preliminary Evaluation:</b> The following criteria’s will be evaluated to confirm pass or fail for further technical and financial evaluation of the proposal</p> <ul style="list-style-type: none"> <li>a) Bid Security</li> <li>b) Technical Proposal</li> <li>c) Financial Proposal</li> </ul> <p>Criteria, sub-criteria, and point system for the evaluation of Full Technical Proposals are:</p> <p><u>Points</u></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;"><b>(A) Company Profile:</b></td> <td style="text-align: right;"><b>[100]</b></td> </tr> <tr> <td>1. No. of similar projects- General Experience</td> <td style="text-align: right;">[50]</td> </tr> <tr> <td>2. No. of similar projects- Specific Experience</td> <td style="text-align: right;">[40]</td> </tr> <tr> <td>3. Organisational structure of the firm /JV</td> <td style="text-align: right;">[10]</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total A = [ ]</td> </tr> </table> <p>The number of points to be assigned to each of the above components shall be determined considering the following four sub-criteria:</p> <p><b>General Experience</b> Consultancy experience of the Firm/JV in the involving multi-disciplinary expert teams with 10 points per project with a maximum of 50 points (only successfully completed projects with reference letters will be counted).</p> <p><b>Specific Experience</b></p>	<b>(A) Company Profile:</b>	<b>[100]</b>	1. No. of similar projects- General Experience	[50]	2. No. of similar projects- Specific Experience	[40]	3. Organisational structure of the firm /JV	[10]	Total A = [ ]	
<b>(A) Company Profile:</b>	<b>[100]</b>										
1. No. of similar projects- General Experience	[50]										
2. No. of similar projects- Specific Experience	[40]										
3. Organisational structure of the firm /JV	[10]										
Total A = [ ]											

	<p>Consultancy experience of the Firm/JV which are related to the scope of works of water, sewerage, road and flood mitigation consultancy works 10 points per project with a maximum of 40 points (only successfully completed projects with reference letters will be counted).</p> <p>Organisational Structure: the 10 points will be given to firms who submit complete organisational structure.</p> <p><b>(B) Project Team [100]</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">1. Lead Hydrologist/ Groundwater Specialist</td> <td style="text-align: right;">[20]</td> </tr> <tr> <td style="padding-left: 20px;">2. Assisting Hydrologist</td> <td style="text-align: right;">[20]</td> </tr> <tr> <td style="padding-left: 20px;">3. Engineer</td> <td style="text-align: right;">[20]</td> </tr> <tr> <td style="padding-left: 20px;">4. Social Expert</td> <td style="text-align: right;">[10]</td> </tr> <tr> <td style="padding-left: 20px;">5. Lead Surveyors</td> <td style="text-align: right;">[15]</td> </tr> <tr> <td style="padding-left: 20px;">6. Lead Surveyors</td> <td style="text-align: right;">[15]</td> </tr> </table> <p style="text-align: right;">Total B = [ ]</p> <p>The number of points to be assigned to each of the above positions or disciplines shall be determined considering the following three sub-criteria and relevant percentage weights:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 40px;">1. Education and qualifications</td> <td style="text-align: right;">[6%]</td> </tr> <tr> <td style="padding-left: 40px;">2. General Experience</td> <td style="text-align: right;">[10%]</td> </tr> <tr> <td style="padding-left: 40px;">3. Specific Experience</td> <td style="text-align: right;">[4%]</td> </tr> </table> <p><b>(C) Approach, Methodology &amp; Work plan [100]</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">1. Approach &amp; Methodology</td> <td style="text-align: right;">[50]</td> </tr> <tr> <td style="padding-left: 20px;">2. Work plan of the Assignment</td> <td style="text-align: right;">[50]</td> </tr> </table> <p style="text-align: right;">Total C = [ ]</p> <p>The marks of this section will be based on conformity of the FORM 3&amp;6 to the Scope of Works and Deliverables as in the TOR.</p> <p>Technical Score (St) = <math>A/100*[W1] + B/100*[W2] + C/100*[W3]</math></p> <p>Weights Distribution</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">W1 Company Profile</td> <td style="text-align: right;">[20]</td> </tr> <tr> <td style="padding-left: 20px;">W2 Project Team</td> <td style="text-align: right;">[60]</td> </tr> <tr> <td style="padding-left: 20px;">W3 Approach &amp; Methodology</td> <td style="text-align: right;">[20]</td> </tr> </table> <p>The minimum technical score (St) required to pass is: <b>65</b> Points</p> <p>The bidder who acquires the minimum technical score will not be subjected to disqualification due to non-compliance of any major/sub criteria of evaluation. In case of such occurrence, clarification will be made to the respective bidder and the proposal will be evaluated based on additional information.</p>	1. Lead Hydrologist/ Groundwater Specialist	[20]	2. Assisting Hydrologist	[20]	3. Engineer	[20]	4. Social Expert	[10]	5. Lead Surveyors	[15]	6. Lead Surveyors	[15]	1. Education and qualifications	[6%]	2. General Experience	[10%]	3. Specific Experience	[4%]	1. Approach & Methodology	[50]	2. Work plan of the Assignment	[50]	W1 Company Profile	[20]	W2 Project Team	[60]	W3 Approach & Methodology	[20]
1. Lead Hydrologist/ Groundwater Specialist	[20]																												
2. Assisting Hydrologist	[20]																												
3. Engineer	[20]																												
4. Social Expert	[10]																												
5. Lead Surveyors	[15]																												
6. Lead Surveyors	[15]																												
1. Education and qualifications	[6%]																												
2. General Experience	[10%]																												
3. Specific Experience	[4%]																												
1. Approach & Methodology	[50]																												
2. Work plan of the Assignment	[50]																												
W1 Company Profile	[20]																												
W2 Project Team	[60]																												
W3 Approach & Methodology	[20]																												



	<p>The formula for determining the financial scores is the following: <math>S_f = 100 \times F_m / F</math>, in where <math>S_f</math> is the financial score, <math>F_m</math> is the <u>lowest price</u> and <math>F</math> the price of the proposal under consideration.</p> <p>The weights given to the Technical and Financial Proposals are: <math>T = [0.6]</math>, and <math>P = [0.4]</math></p>
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## 6 TECHNICAL PROPOSAL - STANDARD FORMS

### FORM TECH-1:

#### 1A - Proposal Submission Form

[Location, Date]

To: [Name and address of Client]

Dear Madam/Sir:

We, the undersigned, offer to provide the consultancy service for “Consultancy Services for Assessing Groundwater Resource and Design of Aquifer recharge systems to ensure improved aquifer recharging and protection in selected 12 islands of Maldives” in accordance with your Request for Proposal dated [xxx] and our Proposal. We are hereby submitting our Proposal, which includes all required documents as per Request for Proposal.

We hereby declare that all the information and statements made in this Proposal are true and accept that any misinterpretation contained in it may lead to our disqualification.

If negotiations are held during the period of validity of the Proposal, we undertake to negotiate on the basis of the proposed staff. Our Proposal is binding upon us and subject to the modifications resulting from Contract negotiations.

We undertake, if our Proposal is accepted, to initiate the services and fulfill the terms and conditions related this contract.

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

We remain,

Yours sincerely,

Authorized Signature [In full and initials]: \_\_\_\_\_

Name and Title of Signatory: \_\_\_\_\_

Name of Firm: \_\_\_\_\_ Address: \_

## 1B - Consultant's Information Form

*[The Consultant shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]*

Date: *[insert date (as day, month and year) of Proposal Submission]*

Procurement Reference No.: *[insert reference number]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

1. Bidder's Legal Name	<i>{insert Bidder's legal name}</i>
2. In case of JV, legal name of each party:	<i>{insert legal name of each party in JV}</i>
3. Bidder's actual or intended Country of Registration:	<i>{insert actual or intended Country of Registration}</i>
4. Bidder's Year of Registration:	<i>{insert Bidder's year of registration}</i>
5. Bidder's Legal Address in Country of Registration:	<i>{insert Bidder's legal address in country of registration}</i>
6. Bidder's Authorized Representative Information	
Name:	<i>{insert Authorized Representative's name}</i>
Address:	<i>{insert Authorized Representative's Address}</i>
Telephone/Fax numbers:	<i>{insert Authorized Representative's telephone/fax numbers}</i>
Email Address:	<i>{insert Authorized Representative's email address}</i>
7. Attached are copies of original documents of: <i>{check the box(es) of the attached original documents}</i>	
<input type="checkbox"/> Articles of Incorporation or Registration of firm named in 1, above.	
<input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement.	
<input type="checkbox"/> In case of government owned entity from the Republic of Maldives, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB Sub-Clause 4.5.	

## 1C - Joint Venture Partner Information Form

*[The Bidder shall fill in this Form in accordance with the instructions indicated below].*

Date: *[insert date (as day, month and year) of Bid Submission]*

Procurement Reference No.: *[insert reference]*

Page \_\_\_ of \_\_\_ pages

1. Bidder's Legal Name:	<i>{insert Bidder's legal name}</i>
2. JV's Party legal name:	<i>{insert JV's Party legal name}</i>
3. JV's Party Country of Registration:	<i>{insert JV's Party country of registration}</i>
4. JV's Party Year of Registration:	<i>{insert JV's Part year of registration}</i>
5. JV's Party Legal Address in Country of Registration:	<i>{insert JV's Party legal address in country of registration}</i>
6. JV's Party Authorized Representative Information	
Name:	<i>{insert name of JV's Party authorized representative}</i>
Address:	<i>{insert address of JV's Party authorized representative}</i>
Telephone/Fax numbers:	<i>{insert telephone/fax numbers of JV's Party authorized representative}</i>
Email Address:	<i>{insert email address of JV's Party authorized representative}</i>
7. Attached are copies of original documents of: <i>{check the box(es) of the attached original documents}</i>	
<input type="checkbox"/> Articles of Incorporation or Registration of firm named in 2, above.	
<input type="checkbox"/> In case of government owned entity from the Republic of Maldives, documents establishing legal and financial autonomy and compliance with commercial law.	

## **6.1 FORM TECH-2: Consultant's Organization and Experience**

### **2A – Proponent's Organization**

*[Provide here a brief description/background (Include Organizational chart) of your Organization and each associate for this assignment.]*

**2B – Summary of contract commitments of the firm**

*[All Bidders and partners of a joint venture Bidder should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.]*

<b>Name (&amp; description) of Contract</b>	<b>Value of outstanding work</b>	<b>Estimated completion date</b>
1		
2		
3		
4		
5		
6		
7		

Note: Please include the works form Firm and JV.

**2C – Experience of the firm (General Experience)**

*[Using the format below, provide information on each contract/assignment for which your Organisation, individually as a corporate entity or as one of the major companies within an association, for carrying out **similar consultancy programmes as needed in TOR and Selection criteria.**] Each project should be accompanied by reference letters from the client to be counted as a valid experience.*

Project Reference Number:	
Contract/Activity Name:	Value of the contract (in MVR):
Country: Location within country:	Duration of assignment/activity (months):
Name of Client:	Total NO of staff-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in MVR):
Start date (month/year): Completion date (month/year):	NO of professional staff-months and Value of the services provided by associated Proponents:

Name of associated Parties, if any:	Name of senior professional staff of your firm involved and functions performed:
Narrative description of Activities/Project:	
Description of actual services provided by your staff within the Activities:	
Description of institutions dealt with and nature and frequency of interaction:	

Firm's Name: \_\_\_\_\_



**2D – Experience of the firm (Specific Experience)**

*[Using the format below, provide information on each contract/assignment which the Lead Consultant and/or Associate Consultant has undertaken, which can be considered as “Specific Experience” as per the evaluation criteria stated in the **Data Sheet**. Use up to 10 Projects. Each project should be accompanied by reference letters from the client]*

Project # \_\_\_\_\_

Contract/Project Title:	Contract value of the contract (in MVR):
Country: Location within country:	Duration of assignment/activity (months):
Name of Client:	Total NO. of calendar-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in MVR):
Start date (month/year): Completion date (month/year):	NO. of calendar-months provided by associated Proponents:
Name of associated Parties, if any:	Name of professional staff of your firm involved and functions performed:
Narrative description of Activities/Project:	
Description of actual services provided by your staff within the Activities:	

Organisation/entity’s Name: \_\_\_\_\_

*NOTE: Project Completion Letters (signed by the Client) must be submitted for each of the above individual projects*

## **6.2 FORM TECH-3: Methodology and Work plan**

*Technical approach, methodology and work plan are key components of this Proposal. You are suggested to submit your Proposal with the following areas clearly described:*

- a) Methodology for each activity,*
- b) Work Plan*
- c) Organization and Staffing,*

*a) Technical Approach and Methodology. In this chapter you should explain your understanding of the objectives of the assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. You should highlight the problems being addressed and their importance, and explain the technical approach you would adopt to address them. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.*

*b) Work Plan. In this chapter you should highlight the main activities and sub-activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the Client), and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the TOR and ability to translate them into a feasible working plan.*

*c) Organization and Staffing. In this chapter you should propose the structure and composition of your team. You should list the main disciplines of the assignment, the key expert responsible, and proposed technical and support staff.*

### 6.3 FORM TECH-4: Team Composition and Task Assignment

6.3.1	<i>Professional Staff</i>				
Designation	Name of Staff	Organisation	Area of Expertise	Position Assigned	Task Assigned
Lead Hydrologists / groundwater specialist (Team leader)					
Assisting Hydrologists/ groundwater specialist					
Social expert					
Lead Surveyors					
Lead Surveyors					
Resident Engineer					

**Note: Evaluation will be conducted to the teams proposed and indicated in the table above.**

#### 6.4 FORM TECH-5: Curriculum Vitae (CV) for proposed team

1. **Proposed Position** [*only one candidate shall be nominated for each position*]: \_\_\_\_\_
2. **Name of Firm** [*Insert name of firm proposing the staff*]: \_\_\_\_\_  
\_\_\_\_\_
3. **Name of Staff** [*Insert full name*]: \_\_\_\_\_
4. **Date of Birth:** \_\_\_\_\_ **Nationality:** \_\_\_\_\_
5. **Education** [*Indicate college/university and other specialized education of staff member, giving names of institutions, degrees obtained, and dates of obtainment*]: \_\_\_\_\_  
\_\_\_\_\_
6. **Membership of Professional Associations:** \_\_\_\_\_  
\_\_\_\_\_
7. **Other Training** [*Indicate significant trainings since degrees under 5 - Education were obtained*]:  
\_\_\_\_\_
8. **Countries of Work Experience:** [*List countries where staff has worked in the last ten years*]:  
\_\_\_\_\_  
\_\_\_\_\_
9. **Languages** [*For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing*]: \_\_\_\_\_  
\_\_\_\_\_
10. **Experience/ Employment Record** (pertaining to general experience clause in the evaluation criteria set in the TOR, check separately for all staff) [*Starting with present position, list in reverse order every employment held by staff member since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held.*]:  
From [Month/Year]: To [Month/Year]: \_\_\_\_  
Employer: \_\_\_\_\_  
Positions held: \_\_\_\_\_

Summary of Projects Undertaken/Role: \_\_\_\_

**11. General Experience** Any specific requirement (Assignments/projects) mentioned in TOR  
*Starting with latest assignment, list in reverse order (see format here below) ::*

From [Month/Year]: To [Month/Year]: \_\_\_\_

Assignment Title: \_\_\_\_\_

Client: \_\_\_\_\_

Positions held: \_\_\_\_\_

Summary of assignment/Role by the professional: \_

**12. Specific Experience** Any specific requirement (Assignments/projects) mentioned in TOR  
*Starting with latest assignment, list in reverse order (see format here below) ::*

From [Month/Year]: To [Month/Year]: \_\_\_\_

Assignment Title: \_\_\_\_\_

Client: \_\_\_\_\_

Positions held: \_\_\_\_\_

Summary of assignment/Role by the professional: \_

**13. Current commitments in Ongoing Projects with the Ministry of Environment**

Name of the Contract/Project: \_\_\_\_\_

From [Month/Year]: \_\_\_\_\_ To [Month/Year]: \_\_\_\_\_

Positions held: \_\_\_\_\_

Summary of Role: \_\_\_\_\_

*A copy of the National Identity Card/Passport and Academic Certificate needs to be attached for each individual*

**Note: Add as separate section if 2 different areas of specific experience is required in TOR**

### 6.5 FORM TECH-6: Work Schedule

#### Assessing groundwater resources and design of aquifer recharge systems in selected 12 islands of Maldives

Activity/Deliverable	Deadline	Mar 21		Apr 21		May 21		Jun 21		Jul 21		Aug 21		Sept 21		Oct 21		Nov 21	
<i>Note: Pls Update Sub-activities as relevant</i>																			
Deliverable 01 Inception Report with a detailed methodology and consultancy implementation plan. This will be based on prior consultation with the PMU and other key stakeholders	30 Calendar days from contract signature																		
Client review of deliverable 01, 21 calendar days from the date of submission																			
Revised submission of deliverable 01, from consultant after incorporating client,	07 calendar days from receiving comments from client																		
Deliverable 02 Baseline assessment report with catchment and aquifer characterization	150 Calendar days from contract signature																		
Client review of deliverable 02, 21 calendar days from the date of submission																			

Revised submission of deliverable 02, from consultant after incorporating client,	07 calendar days from receiving comments from client																		
Deliverable 03 Feasibility and Concept Design Report	210 Calendar days from contract signature																		
Client review of deliverable 03, 21 calendar days from the date of submission																			
Revised submission of deliverable 03, from consultant after incorporating client,	07 calendar days from receiving comments from client																		
Deliverable 04 Video clip	240 Calendar days from contract signature																		
Client review of deliverable 04, 21 calendar days from the date of submission																			
Revised submission of deliverable 04, from consultant after incorporating client,	07 calendar days from receiving comments from client																		
Deliverable 05 Detail Design reports	270 Calendar days from contract signature																		

Client review of deliverable 05, 21 calendar days from the date of submission																			
Revised submission of deliverable 04, from consultant after incorporating client,	07 calendar days from receiving comments from client																		
Deliverable 06 Tender Documents	300 Calendar days from contract signature																		
Client review of deliverable 06, 21 calendar days from the date of submission																			
Revised submission of deliverable 06, from consultant after incorporating client,	07 calendar days from receiving comments from client																		

The Firm/JV shall update this table with the Sub-activities that are proposed for each Deliverable. Note that the Work Schedule must adhere to the period of key Deliverable.



## 7 FINANCIAL PROPOSAL - STANDARD FORMS

### 7.1 FORM FIN-1: Financial Proposal Submission Form

[*Location, Date*]

To: [*Name and address of Client*]

Dear Madam/ Sir:

We, the undersigned, offer to provide consultancy service for “Consultancy Services to assess groundwater resources and design of aquifer recharge systems in selected 12 islands of Maldives” in accordance with your Request for Proposal dated [xxx] and our Technical Proposal. Our attached Financial Proposal is for the sum of [*Insert amount(s) in words and figures*<sup>1</sup>]. This amount is inclusive of the all taxes.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal.

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

We remain,

Yours sincerely,

Authorized Signature [*In full and initials*]: \_\_\_\_\_

Name and Title of Signatory: \_\_\_\_\_

Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

---

1 Amounts must coincide with the ones indicated under financial proposal in Form Fin-2

## 7.2 FORM FIN-2: Financial Proposal Summary

**Summary of Costs:** Consultancy Services for Assessing Groundwater Resource and Design of Aquifer recharge systems to ensure improved aquifer recharging and protection in selected 12 islands of Maldives

Costs		Amount (in MVR)
Deliverable 01 Inception Report	10%	_____
Deliverable 02 Baseline assessment report	25%	_____
Deliverable 03 Feasibility and Concept Design Report	20%	_____
Deliverable 04 Video Clip	10%	_____
Deliverable 05 Detailed Design Report	15%	-----
Deliverable 06 Tender Documents	20%	-----
Subtotal		-----
Taxes Applicable (please detail separately all taxes applicable)		_____
		_____
<b>Total Amount of Financial Proposal</b>		_____

*Note:*

- *The consultancy firm is to submit copy of the GST registration certificate along with the financial proposal.*
- *All Consultancy firms shall express the price of their services in Maldivian currency*
- *Bidder is liable to clarify (and present necessary documentary evidence) and include all relevant tax for the assignment.*
- *If the firm is subject to GST/BPT as per MIRA Regulations and Guidelines the GST/BPT Registration Certificate and GST quote in the financial proposal need to be included*

### **7.3 FORM FIN-3: Form of Bid Security (Bank Guarantee)**

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:**

*[Insert name and address of the Employer]*

**Invitation for Bids No:** *[Insert reference number for the Invitation for Bids]*

**Date:** *[Insert date of issue]*

**BID GUARANTEE No.:** *[Insert guarantee reference number]*

**Guarantor:** *\_[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its bid (hereinafter called "the Bid") for the execution of *[insert description of contract]* under Invitation for Bids No. *[insert number]* ("the IFB").

Furthermore, we understand that, according to the Beneficiary's conditions, bids must be supported by a bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in letters]* (*insert amount in numbers*) upon receipt by us of the Beneficiary's complying supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has withdrawn its Bid during the period of bid validity specified by the Applicant in the Letter of Bid, or any extension thereto provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the period of bid validity, (i) fails to execute the Contract Agreement or (ii) fails to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security issued to the Beneficiary upon the instruction of the Applicant; and (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the bidding process; or (ii) twenty-eight days after the Validity Period, which date shall be established by presentation to us of copies of the Letter of Bid and

any extension(s) thereto, accompanied by the bidding document; or (c) three years after the date of issue of this guarantee.

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

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

---

*[signature(s)]*

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

## **8 Terms of Reference**

### **Terms of Reference to assess groundwater resources and design of aquifer recharge systems in selected 12 islands of Maldives**

#### **Background and Context**

The Republic of Maldives is a low lying, atoll based, archipelagic nation in the central Indian Ocean. It comprises 1,190 islands grouped into 26 atolls that together occupy a land area of 298 km<sup>2</sup> and form a chain over 820 km in length, spread over an area of around 90,000 sq km. With a total population of 341,256, it is the smallest Asian country in terms of area and population. The country has an average elevation of 1.5 meters above sea-level. The two most important sectors of the economy are tourism and fisheries which contribute nearly 80% of the country's Gross Domestic Product (GDP). Maldives is among the most susceptible and vulnerable to climate change.

#### **1.1 Project description**

The Government of Maldives has received funding from the Green Climate Fund (GCF) for the project "Supporting Vulnerable Communities in Maldives to Manage Climate Change-Induced Water Shortages".

The outer islands of the Maldives experiences drinking water shortages during the dry season. These shortages have had significant adverse human, environmental and social impacts on the outer island. The key problems pertaining to freshwater security relate to the increasingly variable rainfall patterns induced by climate change and sea-level rise induced salinity of groundwater. The Government faces constraints in responding to the challenge at hand without assistance, especially in the context of anticipated impacts of climate change.

In response to this climate challenge, the 5-year GCF funded project has the objective to deliver safe and secure freshwater to 105,000 people in the islands of Maldives in the face of climate change risks. This will be achieved by delivering the following results:

- a. Scaling up integrated water supply system to provide safe water to vulnerable households (at least 32,000 people, including 15,000 women);
- b. Decentralized and cost-effective dry season water supply system introduced benefiting 73,000 people across 7 Northern Atolls;
- c. Groundwater quality improved to secure freshwater reserves for long term resilience on 49 islands;

The Government intends to apply part of the proceeds towards procuring the services of Consultancy Firm for the works of “Assessing groundwater resources and design of aquifer recharge systems in selected 12 islands of Maldives”

## **1.2 Groundwater in Maldives**

The freshwater lens underlying each island has historically been the most important water source for islands. The thickness of the freshwater lens, which typically floats atop the denser sea water, is controlled by a number of factors including island width, rainfall rates and associated infiltration and recharge. Knowledge regarding quantity of groundwater of the Maldives during average annual climatic variations is lacking, but recent modelling results indicate that many of the islands are expected to have a measurable freshwater lens although significant decreases in thickness can occur during the dry season months. For smaller islands complete depletion of the lens is likely to occur during the dry season or after successive years of low annual rainfall. The freshwater lens is thicker for islands in the South of the country due to higher rainfall levels than the Central and Northern regions, with the North being particularly dry. Furthermore, excessive groundwater extraction in relation to recharge has led to salt water intrusion and up-coning of saline water together with the preferential flow paths and reduction of the efficiency of natural recharge processes. Thus, the concern is that during droughts, over-pumping can alter the size of the aquifer and limit recovery to its former size. Observation and anecdotal evidence points to ponding due to soil compaction and reduced infiltration capacity in areas of roads and built up areas, leading to evaporation losses.

When considering factors that affect the quality of groundwater in the outer islands, population growth will mean that sewage discharges will increase by approximately the same rate, and the rate of urbanization (4.2%) will result in higher density communities with knock-on impacts on pollution from waste disposal, particularly given the fragility of the freshwater lenses. Furthermore, higher urbanization will preclude the rainwater to permeate into the underground lenses unless a deliberative protection of catchment areas takes place.

Groundwater is highly vulnerable to the impacts of climate change. Rising global temperatures may result in greater heat stress for people and ecosystems, thus, increasing water withdrawal. In addition, sea-level rise, increased wave energy at the coast and increased frequency of tidal surges will increase island-overtopping events and coastal erosion which will increase saline intrusion into freshwater lenses. Two drought issues are especially risky for Maldives: i) extended dry seasons during which harvested rainwater runs out; and ii) reduced overall recharge during the wet season, affecting the availability of groundwater. Thus, the patterns of rainfall are as important as average annual changes.

Due of the hydrogeology of the island, the interrelated issues of groundwater quality and quantity can, among others, be majorly addressed by management approaches that encompass the entire recharge / catchment area. One of the project results is ensure groundwater quality is improved to secure freshwater reserves for long term resilience. In line with this project

objective, it is planned to undertake an assessment of the groundwater resources and develop aquifer recharge systems for selected 12 islands in the Maldives. The Ministry of Environment of Maldives intends to hire a consulting firm to undertake this task.

## **2. Objectives of the Consultancy**

### **2.1 Main Objectives**

To undertake in-depth assessment of the groundwater quality and recharge rates and design managed aquifer recharge (MAR) systems in order to ensure improved aquifer recharging and protection in the selected 12 islands with the added benefit of managing flooding to possible extent.

### **2.2 Specific Objectives**

The specific objectives are to;

- Undertake baseline assessment to establish the current status of the groundwater system and associated catchment characterization
- Feasibility study and concept design of managed aquifer recharge (MAR) systems for the islands with a specific emphasis on flood water management
- Detail design of MAR systems.

## **3. Scope of Work**

### **Focus Islands**

The envisaged and planned scope of work for respective deliverables includes but not limited to the following;

### **3.1 Baseline assessment and catchment characterization**

Across the Maldives there is large uncertainty related to hydrology, water quality and quantity and in general the catchment status in the islands which is important to ensure water security. One important contributor to this is the lack of reliable data and information related to island-specific groundwater situation. To address this knowledge gap, a detailed, assessment will be conducted on 12 inhabited islands (HDh. Finey, HDh. Hirimaradhoo, HDh. Kurinbee, HDh. Neykurendhoo, Sh. Bilehfahi, Sh. Feevah, Sh. Feydhoo, Sh. Lhaimagu, Sh. Narudhoo, Sh. Noomara, N.Lhohi, N. Magoodhoo) to establish the current status of the groundwater (GW) system and catchment characterization. To this end, the consultant will;

- Review available data on previous groundwater assessment reports of the studies undertaken by the ministry.

- Undertake baseline assessment of geological, hydrological (physiochemical, microbiological, geo-physical) and land-use information for 12 islands. The survey shall be conducted such that the whole island will be covered and a detailed overview of the ground water quality and quantity of each island can be obtained. Minimum requirements hydrological studies are as follows:
  - Physiochemical: The following parameters will be tested for each island: pH, Dissolved, Oxygen, Electrical Conductivity, Turbidity, Temperature, Salinity, Ammonia, Nitrate, Phosphate (at least 40 samples per island, from existing GW wells)
  - Microbiological: The following parameters shall be taken for each island: total coliform and faecal coliform (at least 15 samples per island, from existing GW wells). The tests shall be carried out by a certified laboratory.
  - Geophysical GW survey: Including Electrical resistivity (ER) Instrument and Ground conductivity (using equipment like EM31-MK2)
  - Undertake UAV mapping of all islands with real-time kinematic accuracy with ground control points.
  - Produced island topographic maps. Using UAV data supplemented with ground surveys as needed. In addition to topography, include important geographical parameters like shoreline, vegetation line, and roads at block level. The surveying shall comply to the requirements of Maldives land and survey authority. The final accuracy (demonstrated by a number of ground control points) of the UAV mapping should be so that the maximum error at any point should be <10cm.
  - Detailed island levelling data for modelling rainwater/flood water runoff and flood catchment zones. The surveying shall comply with the requirements of Maldives land and survey authority.
  - Soil permeability field tests. (Minimum 5 samples per island)
  - 7 Soil profiles covering top soil layers down to the groundwater level.
  - 1 Steady state pumping tests. This test has to be done in a manner and during a period so that it does not impact the groundwater use in the island. The test shall be carried out in accordance to the dewatering regulation
  - Design and conduct a social survey to quantify groundwater usage in households, tourism, agriculture, fisheries and other economic sectors of the islands. (generalizable groundwater usages for different uses for households, tourism, fisheries and other economic sectors shall be determined).
  - Social survey to collect supporting information regarding flooding depths, frequency and causes
- Assess the present impacts on the freshwater lens and quality of other water sources



- Estimate rates of groundwater recharge and discharge for the islands
- Determine sustainable groundwater yield for each island
- Determine flood prone zones of the islands
- All social surveys must be undertaken at 95% confidence interval and the sampling households shall be geo-coordinated.
- All key experts are required to go to field to each island and lead the surveys in their specialist areas. Such as, Lead and assistant hydrologist shall undertake geophysical, permeability and relevant exercises. Social experts shall be leading the social surveys etc.

### **3.2 Feasibility and Concept Design report**

A feasibility study to determine best possible flood mitigation and groundwater recharge option for the island.. The solution shall cover the whole of the island and shall aim to achieve 50% increase in groundwater recharge rate from the baseline. The justification of how the system achieve the target recharge percentage or best possible increase in groundwater recharge shall be presented in the report. The main principle shall be exfiltration of water into the ground and the proposed solution shall not include extracting of groundwater. At least three options need to be presented excluding the no project option and each option needs to be compared taking into account financial, social and environmental context. The consultant shall also give consideration to the feasibility of recycling and reuse of grey water for recharge in one of the options. A cost benefit analysis, life cycle costing and maintenance and renewal requirements (at least 20 years) needs to be undertaken for each selected option. Monitoring mechanisms to assess proposed concept efficiency shall be included in the design. Concept designs should be tested against simple future scenarios (e.g. % increase of extreme rainfall due to climate change.). In addition, the systems need to be tested for different design standards, e.g. 1, 10 year return period extreme rainfall events. The consultant shall recommend the best possible option to do the detailed design, based on this feasibility study;

### **3.3 Detailed Design Report**

Develop detailed engineering design and drawing for the most feasible option selected above through task 3.1

The Detailed Design Report will contain three parts

**Part 1 (Main report)** will include:

- Basic data and interpretation of these data regarding the detailed design;
- Brief Description of the formulae, methods and models used for any calculations
- General justification and description of the proposed rehabilitated or new structures;
- Calculation notes section including all hydraulic and structural calculations
- Identification of different construction lots (civil works, electromechanical works etc.);

- Works schedule (indication of the timing of each task, links with other tasks, key dates, contractual dates), introduction to nature and quality of materials quality and construction methods (including for maintaining the MAR facilities)

**Part 2 (Bill of Quantities and Cost Estimate)** will include:

A Bill of Quantities for each structure and then by type of works (earth, concrete, mechanical, electrical). The Consultants will here explain the unit costs as well as the percentage considered for miscellaneous and contingencies. Finally, cost estimation will be carried out on the basis of quantities and unit costs. The Consultants will keep this cost estimate confidential.

The capital costs shall be derived from the Bill of Quantities and unit rates developed from recent tender for works in the MoEnv, using either unit prices or cost curves and indexed to inflation. The minor items will be estimated using historic current rates and prices prevailing in the Maldives islands.

For the mechanical and electrical equipment, cost estimates will be prepared based on recent experience of the cost of similar work and / or quotations from internationally recognized manufacturers and suppliers. The cost estimates will allow for transportation and erection on site, all out-site costs and off-site overheads. Costs estimates will be sufficiently detailed to ensure a +/- 10% (?) value from construction bids received.

**Part 3 (Technical Report)** will include:

A drawings section that will include a first sub-section related to the existing structures ('reference drawings') and a second sub-section related to rehabilitate or new structures (including general layouts, civil structures and electromechanical equipment's).

Note: The staffs of the Ministry are expected to join the consultants during the survey trips in order to gain exposure to such investigations. The consultant shall explain any queries the Client's participants have regarding the works that are undertaken.

### **3.4 Tender documents**

#### **Tender Documents**

The Consultants will prepare tender documents accordingly including the following. The Consultant shall also prepare Prequalification Documents if required by the Client

**Volume 1:** Tender and Administrative Documents

**Volume 2:** Technical Specifications and Schedules

**Volume 3:** Drawings and Layouts

**Volume 1** will include at least the following:

- **Invitation to Tender;**
- **Description of the Works and Quantities;**
- **Instructions to Bidders;**
- **Conditions of Contract, Form of Tender (and Appendix);**
- **Bill of Quantities and Schedules;**
- **Form of Contract Agreement, Form of Tender Security, Form of Performance Security, Form of Guarantee for advance payment**

**Conditions of Contract** will be incorporated as the final legal agreement to be drawn up between the Contractor and the Client. The Conditions of Contract would be drawn up in close co-operation with the Client and would incorporate such special clauses as may be required.

Typically the Conditions of Contract will be based on the following:

- For Civil Engineering works: FIDIC Conditions of Contract for Construction (MDB Harmonized Edition), For Building and Engineering Works Designed by the Employer.

The **Bill of Quantities and Schedules** will be prepared for all the tender packages as a basis for tendering and for payment under the Contract. Civil Engineering Standard method of measurement shall be recommended wherever possible.

**Volume 2** will include Technical Specifications and Schedules. Technical Specification will be prepared for all items to be constructed, supplied or erected. Materials and work specifications will cover all aspects of materials and equipment to be provided. Requirements for operating /maintenance and training manuals that include equipment cut sheets, SOPS, and 5 year spare parts lists shall be incorporated into the specifications.

The Consultants will use local or national standards where possible. Where no suitable local or national standards exist then international standards such as BS, ASTM, ISO etc. will be used.

Where possible, the specification of materials (locally produced or imported) will be specified. Construction Schedules will be issued in details.

**Volume 3** will be based on part 3 of the detailed design. All drawings will show clearly defined contract limits relating to the various divisions of works. Drawings will include general arrangement drawings, sections, elevation, typical details and typical reinforcement detailed. In addition detailed reinforcement drawings and bar schedules will be included in the tender documents.

Note: The staffs of the Ministry are expected to join the consultants during the survey trips in order to gain exposure to such investigations. The consultant shall explain any queries the Client's participants have regarding the works that are undertaken.

#### **4. Expected outputs and Deliverables**

The following are the expected outputs and deliverables.

- a. Inception Report with a detailed methodology and consultancy implementation plan. This will be based on prior consultation with the PMU and other key stakeholders to ensure the proper understanding of the context.
- b. Baseline assessment report with catchment and aquifer characterization. Furthermore, all the raw data shall be submitted to the PMU in a format which could be readily imported to GIS and CAD tools. All data should be clearly annotated with descriptions. All survey methodology shall be discussed in detail in the report. In addition to the report, a PowerPoint presentation shall be given to the client explaining the contents of the report.
- c. In each island, the contractor will cover the activities in video footage. The footage will be provided to the client.
- d. Feasibility and Concept Design Report. In addition to the report, a PowerPoint presentation shall be given to the client explaining the contents of the report.
- e. An edited video of 20 minutes, suitable for publication online, covering the following will be produced.
  - i. Details of surveys carried out
  - ii. Details of findings
  - iii. Generalizable lessons regarding best practices of groundwater use and protection
  - iv. Show how the proposed MAR system works and its foreseen impact
- f. Detailed Design Report. The following shall be presented.
  - i. Main Report
  - ii. The Bill of quantities and cost estimates
  - iii. Technical Report (Detailed Drawings)
  - iv. PowerPoint presentation shall be given to the client explaining the contents of the detailed designed report
- g. Tender documents shall include:
  - i. Administrative and tender documents
  - ii. Technical specifications and schedule
  - iii. Construction drawings and layouts

Note:

- Electronic copies of the all deliverables shall be provided to the client in the following formats (where applicable)
  - All spatial data in georeferenced, vector (e.g. Geopackage or ESRI shapefiles) and raster (Geotiff) formats. The preferred GIS system of the client is QGIS (version 3.10 or above)
  - All the engineering designs should be in CAD formats (e.g. AutoCAD)
  - Documents in editable formats (e.g. Microsoft Word). Final versions should be provided both in editable and PDF formats.
- Four numbers of hardcopies shall be submitted in the form of a book for each deliverable with the following requirement,
  - Front and Back cover – Hard Cover
  - High Quality Color Print
  - Size: A4 and A3. A3 pages should be folded appropriately

## 5. Duration and Payments Schedule

The consultancy will be undertaken with a period of 328 Days and is expected to start from May 2021. The consultancy contract will be based on lump sum modality and all payments based on realization of respective deliverables as set out in the table below;

Activity / Deliverable	Due date and remarks	Installment for Payment upon client acceptance and approval of deliverable
Inception Report with a detailed methodology and consultancy implementation plan. This will be based on prior consultation with the PMU and other key stakeholders	30 Calendar days from contract signature, upon client review and approval	10%
Baseline assessment report with catchment and aquifer characterization Report and presentation	150 Calendar days from contract signature, upon client review and approval	25%
Feasibility and Concept Design Report and presentation	210 Calendar days from contract	20%

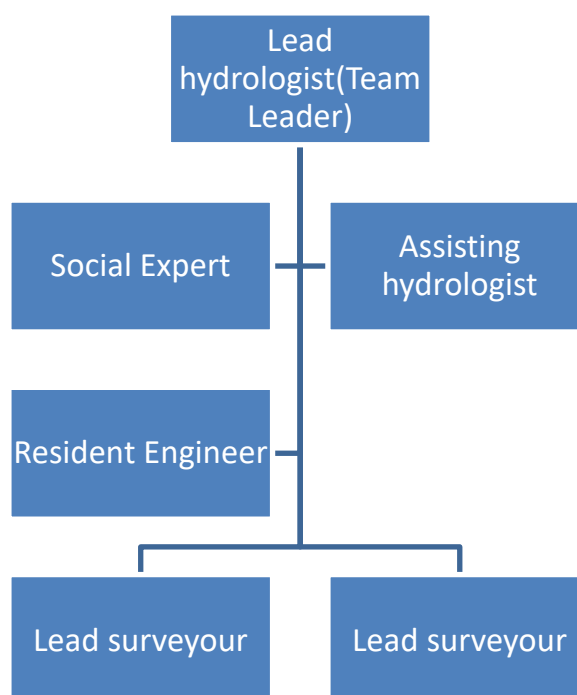
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	signature, upon client review and approval	
Video clip	240 Calendar days from contract signature, upon client review and approval	10%
Detailed Design Report and presentation	270 Calendar days from contract signature, upon client review and approval	15%
Tender documents	300 Calendar days from contract signature, upon client review and approval	20%

## 1. Project Team of key experts

The Team members (Key experts) are required to be present in Maldives for the works. The following staff shall be employed in team as detailed below;

#	Post	No
1	Lead Hydrologists / groundwater specialist (Team leader)	1
2	Assisting Hydrologists/ groundwater specialist	1
2	Social expert	1
3	Lead Surveyors	2
4	Resident Engineer	1



### 1.1 Similar Assignments

To be eligible for this assignment, the consultancy firm must demonstrate past experience in performing the services (description of similar assignments, Value of such assignments). The Firm shall have carried out a minimum of two (2) similar assignments with an average contract value of MVR 500,000.00.

## 1.2 Qualifications of the Design and Consultancy team

The Consultant should submit full CV's for each of the proposed staff members as per the provided format, highlighting the criteria given below.

LEAD HYDROLOGIST / GROUNDWATER SPECIALIST		Sub- Category	Total Score	Sub-Score
<b>Education &amp; Qualification</b>	Masters' degree in hydrology, water resources, geology, geophysics, or related field.		<b>6.0</b>	<b>3</b>
	PhD in hydrology, water resources, geology, geophysics, or related field			<b>2</b>
	Registration in relevant professional / government body			<b>1</b>
<b>General Experience</b>	Experience in water research / studies.	(a) Experience of 05 Projects / Assessments	5	<b>10.0</b>
		(b) Experience of 03 Projects / Assessments	3	<b>6.0</b>
		(c) Experience of 01 Projects / Assessments	1	<b>2.0</b>
<b>Specific Experience</b>	Experience in groundwater research or studies in small island environments.	(a) Experience of 05 Projects / Assessments	5	<b>4.0</b>
		(b) Experience of 04 Projects / Assessments	4	<b>3.2</b>
		(c) Experience of 03 Projects / Assessments	3	<b>2.4</b>

ASSISTING HYDROLOGIST		Sub- Category	Total Score	Sub-Score
<b>Education &amp; Qualification</b>	Bachelors' degree in hydrology, water resources, geology, geophysics, or related field.		<b>6.0</b>	<b>3</b>
	Masters' degree in hydrology, water resources, geology, geophysics, or related field			<b>2</b>
	Registration in a relevant professional / government body			<b>1</b>
<b>General Experience</b>	Experience in water research / studies.	(a) Experience of 05 Projects / Assessments	5	<b>10.0</b>
		(b) Experience of 03 Projects / Assessments	3	<b>6.0</b>
		(c) Experience of 01 Projects / Assessments	1	<b>2.0</b>
<b>Specific Experience</b>	Experience in groundwater research or studies in small island environments.	(a) Experience of 05 Projects / Assessments	5	<b>4.0</b>



		(b)	Experience of 04 Projects / Assessments	4		3.2
		(c)	Experience of 03 Projects / Assessments	3		2.4
<b>SURVEYOR</b>						
			<b>Sub- Category</b>		<b>Total Score</b>	<b>Sub-Score</b>
<b>Education &amp; Qualification</b>	Diploma in surveying or related field and registration in a relevant professional body				<b>6.0</b>	<b>3</b>
	Bachelor's degree in surveying or related field					<b>2</b>
	Registration in a relevant professional / government body					<b>1</b>
<b>General Experience</b>	Experience in surveying including topographic surveys	(a)	Experience of 05 Projects / Assessments	5	<b>10.0</b>	<b>10.0</b>
		(b)	Experience of 03 Projects / Assessments	3		<b>6.0</b>
		(c)	Experience of 01 Projects / Assessments	1		<b>2.0</b>
<b>Specific Experience</b>	Experience in surveys in small islands or similar environments.	(a)	Experience of 05 Projects / Assessments	5	<b>4.0</b>	<b>4.0</b>
		(b)	Experience of 04 Projects / Assessments	4		<b>3.2</b>
		(c)	Experience of 03 Projects / Assessments	3		<b>2.4</b>
<b>SOCIAL EXPERT</b>						
			<b>Sub- Category</b>		<b>Total Score</b>	<b>Sub-Score</b>
<b>Education &amp; Qualification</b>	Bachelor's degree in Social sciences, social research, environmental management, environmental science or related field				<b>6.0</b>	<b>5</b>
	Registration in a relevant professional / government body					<b>1</b>
<b>General Experience</b>	Previous relevant experience working in the Maldives.	(a)	Experience of 05 years	5	<b>10.0</b>	<b>10.0</b>
		(b)	Experience of 03 years	3		<b>6.0</b>
		(c)	Experience of 01 years	1		<b>2.0</b>
<b>Specific Experience</b>	Experience in undertaking community consultations and liaising with community in undertaking development project.	(a)	Experience of 05 Projects / Assessments	5	<b>4.0</b>	<b>4.0</b>

		(b)	Experience of 04 Projects / Assessments	4		3.2
		(c)	Experience of 03 Projects / Assessments	3		2.4
<b>RESIDENT ENGINEER</b>						
	<b>Sub- Category</b>				<b>Total Score</b>	<b>Sub-Score</b>
<b>Education &amp; Qualification</b>	Bachelor's degree in civil engineering, environmental engineering or related field				<b>6.0</b>	<b>3</b>
	Masters' degree in civil engineering, environmental engineering or related field					<b>2</b>
	Registration in a relevant professional / government body					<b>1</b>
<b>General Experience</b>	Experience in designing infrastructure projects	(a)	Experience of 05 Projects / Assessments	5	<b>10.0</b>	<b>10.0</b>
		(b)	Experience of 03 Projects / Assessments	3		<b>6.0</b>
		(c)	Experience of 01 Projects / Assessments	1		<b>2.0</b>
<b>Specific Experience</b>	Experience in designing MAR systems, drainage, sewerage or road.	(a)	Experience of 05 Projects / Assessments	5	<b>4.0</b>	<b>4.0</b>
		(b)	Experience of 04 Projects / Assessments	4		<b>3.2</b>
		(c)	Experience of 03 Projects / Assessments	3		<b>2.4</b>

**Note: The proposed lead hydrologist, assistant hydrologist, social expert and resident engineer should not be working in any other assignment of the Ministry of Environment.**

## 2. Reporting Requirements

The consultants should submit the deliverables as follows.

<b>Activity / Deliverable</b>	<b>Due date and remarks</b>
Inception Report with a detailed methodology and consultancy implementation plan. This will be based on prior consultation with the PMU and other key stakeholders	30 Calendar days from contract signature, upon client review and approval
Baseline assessment report with catchment and aquifer characterization Report and presentation	150 Calendar days from contract signature, upon client review and approval
Feasibility and Concept Design Report and presentation	210 Calendar days from contract signature, upon client review and approval
Video clip	240 Calendar days from contract signature, upon client review and approval
Detailed Design Report and presentation	270 Calendar days from contract signature, upon client review and approval
Tender documents	300 Calendar days from contract signature, upon client review and approval

The consultant (with all key experts) shall have weekly meeting with the client regarding the progress of the works.

## 3. Equipment, logistics and facilities

The Consultants shall ensure that experts are adequately supported and equipped. In particular he/she shall ensure that there are sufficient administrative, computing and secretarial provision to enable experts to concentrate on their primary responsibilities. The Consultant shall meet the full costs for the supply of the teams including all travels, remuneration, insurance, emergency medical aid, facilities and all else necessary for the competent operation of their teams. The Consultants will provide their own office space for their Project team.