



**Ministry of National Planning, Housing and Infrastructure
Republic of Maldives**

TERMS OF REFERENCE

***Consultancy Services for the Construction Supervision of Outer Islands
Harbors, Water Supply and Sewerage Networks Project, Maldives***

1. INTRODUCTION

The Government of the Republic of Maldives has received financing from the OPEC Fund for International Development (OFID), and intends to apply part of the proceeds for the following services: **Consultancy Services for the Construction Supervision of Outer Islands Harbors, Water Supply and Sewerage Facilities project, Maldives.**

2. BACKGROUND

The Maldives consist of 1190 low-lying coral islands spread over an area of 90,000km² in the Indian Ocean. Nearly 200 islands are inhabited, around 90 islands are resorts, and the rest are uninhabited. There are 26 geographical atolls which are grouped into 20 administrative atolls.

Water and Sanitation

It is an objective of the government of Maldives to provide safe water and sewage disposal facilities to all citizens, and there has been significant efforts and activities to establish such facilities in the regions of the country, paving way for 402,071 (Census 2014) citizens to get direct access to safe water and sanitation facilities. Potable water sources commonly found in the islands include groundwater which has been extracted for years resulting in depleted groundwater lens. The alternative solution being used involves community rainwater harvesting systems and/ or direct delivery of produced water to islands in need during drought. While rainwater collection systems provide a way to sustain the populations for part of the year, during dry periods, water delivery is required. Desalination plants are being currently used for islands where the population is high and when other alternatives are not feasible. Only some islands in the country have a full system of water productive and supply system.

The likelihood of the possible worsening of groundwater due to contamination increase in islands where the common method of sewage disposal is through septic tanks. Usually, the septic tanks constructed at each household is made from concrete or masonry materials and the design ensures that the effluent water seeps while the dry sludge is retained. The effluent water will seep into the

groundwater lens and has the potential to contaminate the lens, subsequently posing health risks to the collective community. Moreover, the probability of contamination is even higher given the high-water table found in the majority of the islands.

The sanitation practices used in the islands are critical to the groundwater quality due to the possibility of contamination. It is to be noted that the sanitation facility developments have been relatively fast when compared to the development of water supplies. The sewerage sector has seen substantial developments in the past 5 years including the introduction of conventional gravity sewers systems, bore systems and vacuum systems to communities which used to completely rely on septic tanks for sewerage management. Most of the projects have been funded by international loan agencies while some projects have been community financed as well. By the end of 2018, 65% of the population has access to potable drinking water supply while 61% of the population has access to sanitation facilities compared to 37% and 25% respectively.

Transportation Sector

Sea transport is the main transportation mode within the country. However, there have been limitations on the overall functionality of the transportation mechanism due to much under-developed facilities in the islands. With few exceptions, at islands with significant population density, port infrastructure constitutes of ports, harbours and jetties. Most of those harbours and jetties were destroyed by the Tsunami in 2004. Transport between these ports is principally supported by diesel-powered passenger boat, the Dhonis that most islanders use to travel between islands. With the increased provision for speedboats service, much of the citizens, as well as foreigners, opt to use speedboats transportation to distant atolls. Air transportation via local passenger flights has also increased during the past decade. There are regular ferry services between the capital Male' and most atolls close it, however, there's no regular service to the additional distant ones.

Following the 2004 Tsunami event, a significant number of harbours were recorded to have been damaged at different scales and hence, international donors supported the reconstruction of the damaged harbour facilities within the country. Since harbours are the main access to the islands, inaccessibility due to damage incurred will cease both economic and social activities in the islands. In addition to the foreign funds, the Government of Maldives allocates funding through the national budget under the Private Sector Investment Portfolio (PSIP) annually to reconstruct and repair broken harbours within the islands.

Even so, it has been a major challenge faced by the Government of Maldives to reconstruct damaged harbours as a permanent facility in remote islands where the population is low in the context of the limited national budget. Strategic plans are being under formulated to seek ways to secure finance aids for harbour reconstruction and management, particularly through the extension of the harbour tax to all passengers and islands within the country. This is planned to be carried out by developing a Strategic Master Plan for the sector.

3. PROJECT OBJECTIVE

The Government of Maldives has recently embarked on an economic transformation agenda, through investments in critical infrastructure that would provide the foundation for the next phase of its economic development. In order to positively contribute to the regional development of the outer islands, the Government of Maldives has prioritized invests in the following sub-projects: Water Supply and Sewerage Network Systems and Reconstruction of Harbours.

The project's objective is to improve the living conditions of approximately 20,000 people in 13 outer islands of the Maldives, by providing sustainable access to safe water supply and sanitation services, and harbor infrastructure. The Project will promote health and connectivity, thereby supporting economic growth and poverty alleviation in the country.

The Project's objective shall be achieved through the implementation of the following components: 1. Water Supply Networks, 2. Sewerage Network Systems, 3. Harbour Reconstruction, 4. Consultancy Services and 5. Project Management.

The provision of safe drinking water supply and adequate sanitation facilities is regarded as a basic right for all Maldivians in the new constitution of the country. Therefore, the Government of Maldives has committed to providing access to safe water supply and improved sewerage facilities for all inhabited islands across the Maldives, with an objective of achieving universal access to both in 5 years.

With the exception of B. Dharavandhoo, where a water supply network is already envisioned, construction of water supply and distribution network systems will be provided as follows:

- a) Region 1: Hdh. Nellaidhoo, Hdh. Neykurendhoo, Hdh. Makunudhoo, Sh. Feydhoo;
- b) Region 2: Gdh. Vaadhoo, Gdh. Fiyori;
- c) Region 3: B. Kendhoo.

Construction of sewerage network systems will be done on the following islands:

- a) Region 1: Hdh. Nellaidhoo, Hdh. Neykurendhoo, Hdh. Makunudhoo, Sh. Feydhoo;
- b) Region 2: Gdh. Vaadhoo, Gdh. Fiyori;
- c) Region 3: B. Dharavandhoo, B. Kendhoo.

The reconstruction of the existing harbours as follows:

- a) Region 2: Ga. Kolamaafushi, Gdh. Hoadedhoo;
- b) Region 3: B. Kudarikilu, B. Dhonfanu, B. Kihaadhoo.

The services of consulting firms will be financed under this component. The key responsibilities of the consulting firms will include the following:

- 1. Prepare Employers requirements to form the basis of design-build tender documents;
- 2. Assist the Executing Agency during the tendering process for the selection of the

contractor of civil works;

3. Provide assistance in the bidding process, including bid evaluation, preparation of bid evaluation reports, as well as conclusion of civil works contracts.
4. Review the detailed design;
5. Supervise the construction works on site, including quality assurance and on-site supervision;
6. Ensure contractor compliance with contract, legal and regulatory requirements and environmental safety measures;
7. Ensure proper commissioning and handover of as-built documentation, facilities, O&M equipment; and,
8. Check and approve monthly withdrawal applications, variations and claims of the contractor and prepare monthly progress reports to be submitted to the Executing Agency and OFID.

4. FOCUS ISLANDS

Package 1

1	Design and Build of Water Supply and Sewerage Networks in Hdh. Nellaidhoo
2	Design and Build of Water Supply and Sewerage Networks in Hdh. Neykurendhoo
3	Design and Build of Water Supply and Sewerage Networks in Hdh. Makunudhoo
4	Design and Build of Water Supply and Sewerage Networks in Sh.Feydhoo

Package 2

1	Design and Build of Water Supply and Sewerage Networks in Gdh. Vaadhoo
2	Design and Build of Water Supply and Sewerage Networks in Gdh. Fiyori
3	Design and Build of Water Supply and Sewerage Networks in B.Kendhoo
4	Design and Build of Sewerage Network System in B.Dharavandhoo

Package 3

1	Provision of Harbor Reconstruction in Ga. Kolamaafushi
2	Design and Reconstruction of Harbour in Gdh. Hoadedhoo

Package 4

1	Design and Reconstruction of Harbour in B. Kudarikilu
2	Design and Reconstruction of Harbour in B. Dhonfanu
3	Design and Reconstruction of Harbour in B. Kihaadhoo

5. SCOPE OF WORKS

The Consultant shall be the Employers Representative on site and shall perform all duties delegated by the Employer in writing in accordance with *the MDB's Harmonized Edition of the Conditions of Contract for Construction prepared and copyrighted by the International Federation of Consulting Engineers (Fédération Internationale des Ingénieurs-Conseils, or FIDIC), FIDIC 2010* which is available at www.fidic.org.

Part I: Review of Detailed Designs

The Consultant will review the detail designs made by the Design Consultants to ensure that it provides the product required and to verify that correct engineering practices were used in the design and ensure that the design meet the needs and the standards of the Client. The time duration to review the design is 01 Month from the day of submission.

Part II: Review and Approval of construction drawings

The consultant will review and approve shop drawings from contractor before start of the work. The consultant will also check if all approvals are obtained for electrical design.

Part III Construction Supervision

- a. Material Approval:** Approval of all the materials required for the works shall be checked, compared with specifications given in the proposals and design requirements and approved in a predefined clear process and records must be maintained in proper manner and share with the Client. Approvals shall be organized in a way not causing any delays to Contractors works.
- b. Day to Day supervision:** The consultant shall monitor day to day work progress of Contractor and keep a log of activities done on each day. During supervision, if the consultant finds any defective work, or work that does not conform to contract drawings and specification, the work shall be rectified immediately. **The consultant should check if all the necessary approvals and permits to carry out the works are obtained and kept updated by the contractor.**
- c. Coordination of works:** The Consultant will organize and direct execution of the works, by defining compliance with programmes and relations between stakeholders (MNPHI/PMU, Contractors, Suppliers and third parties). Coordination will be ensured mainly by holding regular site meetings and general monthly meetings, with managers of the Contractors and Manufacturers, the MNPHI/PMU.

- d. **Daily records:** The Consultant shall keep daily records of weather, Contractor's staff on site, equipment available on site, material available on site and material brought to site.
- e. **Supervision of field surveys:** The Consultants will supervise the Contractors who should carry out field surveys such as topographic, hydro-geological and geological surveys. The Consultants will prepare technical reports on all measurements made by the Contractor and will submit them to the MNPHI/PMU.
- f. **Identifying Special Studies:** in case the Consultants during progress of work come to the conclusion that special studies would be required to assist the Project Management Unit (PMU) in specific problems unforeseeable before conclusion of consulting contract, he will inform the MNPHI/PMU immediately and early enough to allow the Employer to arrange for such expertise.
- g. A **Quality Control and Quality Assurance Plan** will be developed by the Consultants to ensure that the structures are built and equipment installed in conformity with the Contractual Specifications, approved drawings, standards, good engineering practice and State-of-the-Art.
- h. A **safety and security management** plan should be prepared by the contractor and approved by the consultant. The consultant shall ensure that the plan is established and maintained by the contractor. Any safety and security incident occur at site shall be reported to the client.
- i. A **Plan for Project Cost Control** will be developed on the basis of the field survey control and quantity survey required for determination of actual quantities of work accomplished by the Contractor(s) and Supplier(s) under direct guidance of the MNPHI/PMU, the Consultant will approve or reject the quantities of materials delivered, equipment erected, and works performed by the Contractor(s) and Manufacturer(s). The consultant shall ascertain the work measurements and payment claims by the Contractor and certify these to the Client as being correct and within the terms of contract.
- j. **Plan for Project Progress Control:** using the same basic data as those established for project cost control, a progress chart will be maintained and updated in the Consultant(s) office. The work progress will be followed by the Consultant especially during the weekly works meetings on sites. A monthly report of weekly meetings will be established by the Consultant.
- k. **Representing the MNPHI/PMU:** The Consultants shall be the MNPHI/PMU's representative on site and shall perform all duties delegated by the MNPHI/PMU in writing in accordance with FIDIC. The Project Coordinator (PC) for the project will be appointed by the MNPHI/PMU in writing.
- l. **General Reporting** to Government & OFID. The Consultants will assist the MNPHI/PMU in supplying information related to the design and works progress to Government and OFID.

Works commissioning

The Consultants will implement Works commissioning including:

- m. Supervising the acceptance tests and preparing the **Taking over Certificate**.**
- n. Preparing the **Completion Report**** which will be based on the record maintained during work supervision phases. It will include the environmental completion report which will be submitted to MNPHI/PMU for compliance with initial recommendations.
- o. **Implement Shop Inspection of Electromechanical Equipment**:** the Consultants will check the manufacturing of equipment and will attend tests of main items for acceptance as and when necessary. These tests concern mechanical tests and chemical analyses, routing tests and standard tests, dimensional checks and Non-destructive tests.
- p. **Review the ‘As-Built Drawings’**.** The Consultants will review the ‘As-Built Drawings’ during construction of works prepared by the Contractor.
- q. **Review Operation and Maintenance Manual**:** The consultant will review the operation and maintenance manual when prepared by the contractor.

Outputs of Part I:

- Contractors are properly supervised and coordinated as per MNPHI/PMU instructions.
- Quality Control and Quality Assurance Plans are issued.
- Various authorizations and instructions to the Contractor(s) and/or Manufacturer(s) being issued regularly.
- Plan for Project Cost Control update delivered monthly as per MNPHI/PMU instructions.
- Plan for Project Progress Control update delivered monthly as per MNPHI/PMU instructions.
- Works are temporarily commissioned, ‘As Built Drawings’ delivered and Operation & Maintenance Manuals issued.
- Weekly, monthly and final report.

Part III: Capacity Building and Performance Control over Defect Liability Period

Capacity Building

The Consultant will provide on-the job training to the counterpart staff on all aspects of the work carried out. Selected counterpart staff from each island will be attached to the Consultant’s team for on-the-job-training in construction supervision. During construction stage the contractor will provide on-the-job training to the selected counterpart staff from the beginning of construction

works. The consultant shall work with contractor to formulate a training curriculum and obtain approval from the client. The records of trainees should be kept and reported to the client.

After commissioning, the Consultant in coordination with contractor will organize a formal two weeks training for the operation and maintenance of the works rehabilitated or newly installed, followed by two weeks of practical exercises on sites.

Supervision during the Defect Liability Period of the contract

The Consultant will carry out quarterly inspections during the one-year defects liability period and instruct accordingly the contractors with regard to outstanding works and defects. After this period and satisfactory inspections, the Performance Certificate will be issued.

Defect Liability of the Consultants

The MNPHI/PMU will be in charge of validating the result of the work of the Consultants against the targeted objectives. Any additional consultancy needed for corrective actions that may occur for reaching the objectives will be under the responsibility of the Consultant (unless these measures could not be identified at the detailed design stage or are not under the responsibility of the Consultants).

Outputs of Part II:

- Key MNPHI/PMU staff are trained on the job and formerly;
- Defect issues will be identified and addressed before the completion of Defect Liability period
- Quarterly site inspection during defects liability period Final Project Completion Report (PCR) to be submitted

5.1 General Requirements

Coordination of works

The Consultant will monitor and report on the progress of the works liaising with MNPHI/PMU and the Contractors. Coordination will be ensured by holding regular site meetings and general monthly meetings, with managers of the Contractors and the MNPHI/PMU.

The Consultant shall establish a field office at each location/ island for the adequate operation and management of the tasks specified. The Consultant should not share any resources with the Contractor.

Quality Control and Quality Assurance monitoring will be carried out by the Consultant to ensure that the structures are built and equipment installed in conformity with the Contractual Specifications, approved drawings, standards and good engineering practice.

A Plan for Project Cost Control will be developed on the basis of the field survey control and quantity survey required for determination of actual quantities of work accomplished by the Contractor. The Consultant will approve or reject the quantities of materials delivered, equipment erected, and works performed by the Contractor in consultation with MNPHI/PMU.

A progress chart will be maintained and updated in the Consultants' office. The work progress will be followed by the Consultant especially during the weekly works meetings on sites. Daily and weekly progress update reports and monthly reports will be prepared by the Consultant and forwarded to the MNPHI/PMU. If there are any urgent issues to notify MNPHI/PMU immediately.

The Consultants will assist in providing information related to the works progress to MNPHI/PMU when needed.

6. Project Team

The following staff shall be employed in team as detailed below;

#	Post	No
1	Project Manager (Team leader)	1 for each package
2	Sewerage / Water / Civil engineer	1 for each package
3	Electro-Mechanical Engineer	1 for each package
4	Resident Engineer	2 for each island

The Project Manager should be based in Male' but should travel to project sites at least once in 2 months without the guidance of Client. Sewerage Engineer and Electro – Mechanical Engineer should travel to project at planned intervals. The consultant shall set-up their office in capital city, Male' region.

7. EVALUATION AND QUALIFICATION CRITERIA

If the Consultancy firm is a foreign entity, the firm shall have an association with a local partner to facilitate all local requirements and logistics. The details of this party shall be provided with the proposal and association agreement.

The PMC consultant should not be involved as a lead partner or sub-consultant in the design consultancy of the specified projects in the packages. If such a case arise, it would lead to disqualification of the consultant from this consultancy.

The Client reserves the right not to award more than two packages to a single Consultant.

8. 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 Four (4) similar assignments of 1,000,000 within last 5 years period.

9. REQUIRED QUALIFICATION OF PROJECT TEAM

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

Position	Qualification	General Experience	Specific Experience
Project Manager	Bachelor's degree in Project Management or Environmental Management/Science/Civil Engineering or in a related field	10 Years	5 Years
Civil Engineer	Bachelor's degree in Civil/Environmental Engineering	5 Years	3 Years
Electro-Mechanical Engineer	Bachelor's Degree in Electrical/Mechanical Engineering	5 Years	3 Years
Resident Engineer	Bachelor's Degree in Civil Engineering	5 Years	3 Years

a. Project Manager

Bachelor's degree in Project Management or Environmental Management/Science/Civil Engineering or in a related field with minimum 10 years' experience in project management, along with specific experience in the field of Water supply, Sewerage facilities, harbor, etc. projects. Tertiary certification will be an added advantage.

b. Civil Engineer

Bachelor's degree in Civil/Environmental Engineering with minimum 05 years' experience along with Specific experiences in designing water supply, sewerage systems. Tertiary certification will be an added advantage. In addition should be able to monitor and check of materials and equipment as per approval or acceptable specifications and standards.

c. Electro-Mechanical Engineer

Bachelor's Degree in Electrical/Mechanical Engineering with minimum 05 years' experience along with specific experience in designing Electro-Mechanical components of Water/Sewerage

Facilities. Tertiary certification will be an added advantage. Experience in designing electrical/mechanical components in resorts, buildings, water supply and sewerage projects. In addition should be familiar with pumps and its operations under different applications.

d. Resident Engineer

Bachelor's Degree in Civil Engineering with minimum 05 years' experience in construction site and working as a Site Engineer in Water Supply/Sewerage projects. In addition should also have demonstrated experience in the use of dewatering techniques for construction in areas with high water tables and an understanding of the difficulties, limitations and mitigation methods required to minimize the impacts of dewatering.

10. 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.

11. PAYMENT (Not required for EOI stage)

Payments will be in accordance with the schedule specified below;

DESCRIPTION	ALLOCATION	REQUIREMENT
Part I & Part II	As per invoice	Submission of detailed design review report
		Submission of review and approval document for shop drawing
Part III Monthly payment	As per invoice	Submission of Monthly Report
Reimbursable expenses	As per invoice	Submission of Invoice and supporting documents (time sheets, receipts of reimbursable expenditures etc.) in the specified format
Quarterly Payments (applicable for defect period)	As per invoice	Upon submission of quarterly inspection report for defects notification during defects liability period.

12. DELIVERABLES

The consultants shall complete the following deliverables and submit the following reports;

Part I

Deliverable	Submission deadline
Design review report	1 Month after the design is submitted
Weekly progress reports	At the end of every week, after the contractor is mobilized on site
Monthly Progress reports	10 th of the following Month
Quarterly inspection Report	At the end of each quarter of the defect liability period
Final Project Completion report	Within 3 months after the completion of the project/package

13. TECHNOLOGY TRANSFER

The Consultant shall consider the technology transfer as an important aspect of this project. The Consultant shall provide the opportunity to the staffs of the client to be involved in the working team of Consultants during the work supervision stage of the project for their capacity development wherever possible.

14. DURATION OF THE ASSIGNMENT

The period of total engagement will be **24 months** upon the signing of the contract agreement with the selected Consultant for the Consultancy for Works Supervision.

Commencement of Consultancy work will start only when the Contractor mobilizes to the site.

If the works are stopped for any reasons, the Client has the right to terminate the Contract after notifying the Consultant and the Client will not be liable for any damages due to termination of the Contract.