بسم الله الرحمن الرحيم

Ministry of National Planning and Infrastructure މިނިސްޓްރީ އޮފް ނޭޝަނަލް ޕްލޭނިންގ އެންޑް އިންފްރާސްޓްރަކްޗަރ

Male', Republic of Maldives. މާލެ، ދިވެހިރާއްޖެ.

Economic Prosperity – Social Harmony

TERMS OF REFERENCE

Consultancy Services for Survey, Design & EIA works of Road Infrastructure Development in G.A. Kolamaafushi

1. INTRODUCTION

Ministry of National Planning and Infrastructure (MNPI) on behalf of the Government of Maldives is seeking the assistance of a qualified and competent consulting firm for developing survey, design and EIA works of **Road Infrastructure Development in G.A. Kolamaafushi** Maldives. The services include preparation of Preliminary Designs, EIA, Detailed Design, Technical Specifications, Tender Documentation and Bill of Quantities (BoQ) of the Road Infrastructure Development Project.

2. BACKGROUND

The Maldives is a South Asian country situated in the Indian Ocean South-Southwest of India, comprising 1,192 coral islands grouped in a double chain of 26 atolls along the north-south axis. With a total land area of approximately 298 square kilometers contained within a region of approximately 90,000 square kilometers between latitudes 1°S and 8°N, and longitudes 72° and 74°E, Maldives is one of the most land dispersed countries in the world.

The Transport Sector is a growing area in Maldives with an increase in number of vehicles in the past few years. Road infrastructure is currently regarded among the most priority infrastructure required by the communities. In the past four years public investments in the road infrastructure development have increased significantly all around the country.

Due to the increase in number of the vehicles and due to the poor conditions of the existing road gravels roads, the roads have become a major issue for the community. The poor infrastructure leads difficult accessibility to important public infrastructure and commercial buildings. Flooding and higher maintenance cost are also a major issues faced by the Island communities.

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3. PROJECT OBJECTIVE

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Government has pledged to develop roads in G.A. Kolamaafushi into paved roads which will make the roads more accessible and safer for the road users. It will also help to reduce the cost of maintaining the existing gravel roads and also will solve the flooding issues faced by the island community. A list of detailed services required by this consultancy is listed under scope of services.

4. SCOPE OF THE SERVICES

The scope of services shall include, but not limited to the following:

4.1. Survey and Preliminary Design Stage

4.1.1 Topographic Survey

The consultant shall carry out the topographic survey of all islands mapping the shoreline (LWL, MSL and HWL), elevation of all roads with the boundaries (including plot boundaries) with a grid interval of 2m or less, all vegetation and other features such as road lights, utility networks, etc. within the road boundaries, limits of island waters including inland lakes, ponds, mangroves, and swampy ground.

Names of all public plots and road names shall be labeled on the map.

Survey should be carried out in reference to the existing Permanent Station Marks established in each island. In case of Permanent Station Marks are not established within the islands, the surveyor shall establish a PSM as per the guidelines set by Maldives Land and Survey Authority and get their approval.

4.1.2 Geotechnical Survey

The consultant shall undertake all geotechnical investigations required for designing of the road pavement structure and road drainage system. These investigations shall include, but not limited to Soaked CBR test, Specific Gravity test, Moisture Content, Grain Size analysis, Atterberg Limit Test, Soil Profiles and Studies to determine soil percolation and infiltration rate.

4.1.3 Hydrological Survey

The consultant shall undertake literature review of existing studies undertaken for the islands inclusive of historical and current rainfall data for the region, any historical and current data on flooding associated with storm surges, any existing hydrological surveys. The consultant shall also carry out the assessment of the current groundwater conditions including level and quality of the ground water.

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The consultant shall also carry out community consultations to attain information on flooding frequency and causes and to get their views on potential solutions. Based on the collected data, flood risk maps for the island need to be developed.

4.1.4 Utilities Survey

The consultant shall coordinate with various utility service providers on the island and island councils and identify the locations of existing facilities and any future plans for expansions. Examples of these may include water lines, sewerage lines, electrical and other utilities.

4.1.5 Preliminary Design

Based on the surveys and stakeholder meetings, the consultant shall carry out the preliminary design for the carriageway, sidewalks, drainage, provisions for future utilities, road safety features.

For carriageway the consultant shall undertake a cost benefit analysis for both asphalt paved and interlocking paved carriageways and also based on the studies the consultant shall recommend the best possible option for the islands.

Sidewalk shall be designed in such a way that is it easy for the wheel chairs to access. Provisions for tree plantations shall be provided in the sidewalks.

For drainage based on the hydrological survey and maps created, maps need to be developed for various future climate scenarios and the robustness of the different proposed options in each of the climate scenarios need to be investigated. In addition the system need to be tested for various extreme weather events, for example 1 in 25 years, 1 in 50 years flood events. The consultant shall recommend the best possible option based on these studies.

Based on the utilities survey the consultant shall design sufficient provisions for any future utilities that have to be provided.

The consultant shall coordinate with Maldives Transport Authority and Maldives Police Service for designing all the road safety features such as road sign boards, road markings, and speed breakers.

4.1.6 Preliminary Cost Estimate

Based on the preliminary design the consultant shall provide a preliminary cost estimate for the project.

4.2. Detailed Design and Preparation of Tender Documents.

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Based on the approved preliminary design the consultant shall prepare the following documents.

4.2.1 Detailed Engineering Design

All drawings with the design report 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.

The Consultant shall assist the Client in phasing out the scope of works of the project.

4.2.2 Preparation of Tender Documents

i. Preparation of Conditions of Contract and Evaluation Criteria

ii. Preparation of Technical Specifications
   1. Technical Specifications 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.
   2. 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.
   3. Where possible, the specification of materials (locally produced or imported) will be specified. Construction Schedules will be issued in details.

iii. Preparation of Bill of Quantities
   1. The Bill of Quantities will include Bills for each type of works i.e. earth works, sidewalk, paving works, road safety works, road drainage works, etc. The Consultants will here explain the unit costs as well as the percentage considered for miscellaneous and contingencies.
   2. Bill of Quantities will be established separately for each island.

iv. Construction Drawings
   1. It shall include preparation/submission of Construction Drawings of all works items.

v. Final Cost Estimates

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4.3. Environmental Impact Assessment

This shall include carrying out Environment Impact Assessment up to the requirement of Environment Protection Agency (EPA).

a. Undertake the application process for the EIA works of the assignment
b. Undertake the scoping or screening wherever applicable for the assignment
c. Undertake field data collection survey and develop the EIA report as per the approved Terms of Reference by EPA after the scoping meeting
d. Submit the final EIA Report to EPA and get approval/decision statement
e. Undertake submission and provide any clarifications where as necessary to the submitted EIA
f. Accommodate any request by EPA for any additional information regarding the submitted EIA report.

It is the responsibility of the consultancy firm to expedite the process of EIA application submission, follow up on scoping meeting, draft TOR submission, and follow up on TOR approval, obtain and address the queries made by the EIA reviewers and follow up on the EIA review and approval process.

5. THE EXPERTS REQUIRED

The following staff members will be required for each package and should not be repeated in other packages that are applied. The key expertise required for consulting services are:

Post	No
Project Manager (Team leader)	1
Road Engineer	1
Hydrologist / Drainage Engineer	1
Procurement Specialist	1
Quantity Surveyor	1
Surveyor	2
EIA Specialist	1

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

5.1. Project Manager (Team Leader)

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5.1.1 Qualifications;

a. He/She should be graduated from university level in the civil/structure disciplines and having at least 15 years working experiences after graduation. An experience as project manager/resident engineer at least for the period of 5 years is also required for this position. An experience also shall include at least 10 years in road project, at least one year project in Maldives.

5.1.2 His/her responsibilities shall include but not be limited to:

a. Overall responsibility for management or the project liaison with the Client, and all authorities concerned with matters relevant to the design and final physical implementation of the proposed sub-project, reporting of project progress, financial control and coordination of work carried out;
b. Responsible for Preliminary Design, Detailed Design and Tender Documents and any other information necessary, assessing the survey requirements, organization of personnel review of surveys and obtaining Client's approval;
c. Organization of personnel and management of the consultant team experts and staff;
d. Responsible for prequalification of contractors, tender evaluation and construction supervision;
e. Responsible for all progress reporting, financial control, approval of all contract documentation and advice to the Client on all measures to improve efficiency;

5.2. Road Engineer

5.2.1 Qualifications;

a. He/She should be graduated from university level in the civil/highway disciplines and having at least 15 years working experiences after graduation. An experience as road design engineer at least for the period of 10 years is also required for this position.

b. The engineer shall have extensive experience and knowledge in the various types of road pavement expertise required for design works:

5.2.2 His/her responsibilities shall include but not be limited to:

a. Shall carry out the preliminary design of the road, detailed design of the road and also preparation of tender drawings, technical specifications.

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b. Review and assessment of all available data and information related to the works.

5.3. Hydrologist / Drainage Engineer

5.3.1 Qualifications;

a. He/She should be graduated from university level in the Water Engineering disciplines and having at least 10 years working experiences after graduation. An experience as a drainage engineer at least for the period of 5 years is also required for this position.

b. The engineer shall have extensive experience and knowledge in the various types of road drainage expertise required for design works:

5.3.2 His/her responsibilities shall include but not be limited to:

a. Responsible for conducting the hydrological surveys and also design the road drainage system based on these surveys.

b. Review and assessment of all available data and information related to the works.

5.4. Procurement Specialist

5.4.1 Qualifications;

a. He/She should be graduated from university level and having at least 10 years working experiences after graduation. An experience as document specialist at least for the period of 5 years is also required for this position.

b. The Document Specialist shall have extensive knowledge and experience in preparation of tender documents for the international competitive bid of the civil works.

5.4.2 His/her responsibilities shall include but not be limited to:

a. Preparation of prequalification documents;

b. Preparation of tender documents consisting of general condition of contract, specifications and bills of quantities.

5.5. Quantity Surveyor

5.5.1 Qualifications;

a. He/She should be graduated from university level in the Civil/Quantity Surveying disciplines and having at least 10 years working experiences

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after graduation. An experience as cost estimator at least for the period of 5 years is also required for this position.

b. The Quantity Surveyor shall have extensive experience and knowledge in the cost estimate for the project

5.5.2 His/her responsibilities shall include but not be limited to:

a. Responsible for preparation of the Preliminary Cost Estimate, Final Cost Estimate and also preparation of the Bill of Quantity.

5.6. Surveyor

5.6.1 Qualifications;

a. He/She should be graduated from university level in surveying and having at least 5 years working experiences after graduation. An experience as Surveyor at least for the period of 5 years is also required for this position.

b. The surveyor shall have extensive knowledge and experience in engineering related works for the international civil and building works projects.

5.6.2 His/her responsibilities shall include but not be limited to:

a. Carrying out detailed topographic surveys.

b. Establishment of reference datum points to be used during design and construction stage.

c. Mapping out utilities and services networks.

5.7. EIA Consultant

5.7.1 Qualifications;

a. He/She should have a minimum Bachelor's Degree in Environmental Engineering/ Environmental Science/ Environmental Management or related field and having at least 5 years working experience in Environmental Impact Assessment (EIA) after graduation.

The consultant should hold a permanent EIA license and his/her EIA license copy shall be submitted along with a dated letter stating his/her association with the bidding party

6. SIMILAR ASSIGNMENT

To be eligible for this assignment, the consultancy firm must demonstrate past experience in performing the services (description of similar assignments, Value of such

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assignments). The Firm shall have carried out a minimum of Four (4) similar assignments with a minimum contract value of MVR 1,000,000.00 each.

7. REPORTING REQUIREMENTS

The consultants should submit a Monthly report at the end of each month in a format agreed with the MNPI representative. At the end of each quarter a consolidated report summarizing the events of the months preceding shall be submitted in place of the monthly report.

Details	No. of Copies
Detail Map showing all survey results in AutoCAD format	-
Inception Report	2 hard copies + Soft copy
Report on Existing Environment	2 hard copies + Soft copy
Preliminary Design Report	2 hard copies + Soft copy
EIA report	Hard copies + Soft copy as EPA requirement
Detailed Design Report and Tender Documents	3 hard Copies + 1 soft copy

8. 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 provisions 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 the teams. The Consultants will provide their own office space for the Project team.

9. SCHEDULE

The project implementation is to be carried out in the following period of time:

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DESCRIPTION	TIME OF COMPLETION
Survey and Preliminary Design	42 days from awarding of the contract
Environmental Impact Assessment	90 days from awarding of the contract
Detailed Design and Preparation of Tender Documents.	100 days within awarding of the contract

10. SUBMISSION OF REPORTS/ DELIVERABLES

The Consultants shall submit the following reports in English:

10.1. Inception Report

Detailing out the specific tasks to be carried out, a time-based work plan, work methodology and other appropriate technicalities for conducting the assignment shall be submitted. The inception report shall be submitted no later than **14 days** after the commencement of the assignment. The inception report shall also identify any constraints the consultant/firm foresees with delivering the services and propose actions to be implemented to overcome the constraints identified.

10.2. Report on Existing Environment

A report on existing environment need to be prepared based on the literature reviews, surveys and field visits undertaken. This report needs to be submitted no later than **21 days** after the commencement of the assignment.

10.3. Preliminary Design Report

The consultant shall submit the preliminary design report as per the clause 4.1.5 and preliminary cost as per the clause 4.1.6 no later than **42 days** after the commencement of the exercise.

10.4. EIA Report

The consultant shall complete the EIA report as per the EPA requirement no later than **90 days** after the commencement of the exercise.

10.5. Detailed Design Report and Tender documents

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The consultant shall submit the detailed design report as per the clause 4.2 no later than **100 days** after the commencement of the exercise.

The consultant shall provide all the AutoCAD drawings and design calculations with the Detailed Design Report.

11. SPECIFIC TERMS OF REFERENCE

11.1. The Consultant shall be solely responsible for gathering and analysis of all data required relating to the project and shall undertake such surveys and investigations for the satisfactory implementation of the Project.

11.2. The Consultant shall at all times utilize the most economical, effective and widely accepted engineering concepts and standards.

12. PAYMENT SCHEDULE (Not required for EOI stage)

Payment schedule will be in accordance with the schedule specified below:

DESCRIPTION	ALLOCATION	REQUIREMENT
Advance Payment	15%	Advance Payment Bank Guarantee submitted within 30 days of receiving the Letter of Acceptance (15% of the value of the agreed Contract Price).
Preliminary Design Report	20%	Upon submission of Preliminary Design Report
EIA Report	25%	Upon issuance of Decision Statement from EPA
Detailed Design Report and Tender Documents	40%	Upon submission of Detailed Design Report with Tender Documents
Total	100%	
Amortization of 15% will be deducted from each monthly invoice to recoup the advance payment Advance Payment will be paid upon Submission of Advance Payment Bank Guarantee		

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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 design phase of the project for their capacity development wherever possible. If requested by Clients staff, the Consultant shall brief and demonstrate the survey and design procedures.

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