



**Road Development Corporation Limited  
Republic of Maldives**

**Terms of Reference for  
CONSULTANCY SERVICES FOR L. GAN MAJOR ROADS DEVELOPMENT PROJECT  
Date: 18<sup>th</sup> January 2023**

## **1. BACKGROUND**

Road Development Corporation Limited, an incorporated limited liability company operating under the registration number C10482019 and having its registered office at MSL Buildings, First Floor, Malé, Republic of Maldives (herein after called and referred to as “the Employer”), wishes to receive bids for the consultancy services for

- Preparation of Environmental Impact Assessment (EIA) for L.Gan Road Development project,
- Detailed surveying of L.Gan, and
- Designing of storm water management system in L.Gan.

## **2. SCOPE OF WORK**

The Consultant will provide consultancy services for the preparation of EIA for L.Gan Road Development project, undertake the detailed surveying of L.Gan and design the storm water management system based on the surveying results and guidelines set by the Employer. The scope of individual works is specified as follows. RDC shall have the right to add or remove any component of the works specified in the scope of works.

### **A. Consultancy services for preparation of EIA**

The Consultant will have to provide consultancy services for preparation of EIA for L.Gan Road Development project, including the submission fees and all relevant data collection.

After the contract has been awarded and accepted, the scope of the EIA document and relevant data will be provided in the Environmental Protection Agency (EPA) Scoping meeting. This meeting will discuss the following topics.

- Project area
- Baseline studies
- Project details
- Description of the environment (impacts on the natural environment and impact assessment with proposed stormwater management system design)
- Removal and relocation of vegetation
- Legislative and regulatory considerations
- Potential impacts (Impact on traffic flow, environmental, socio-economic and socio-cultural impacts, etc...)
- Construction related hazards and risks
- Mitigation and management of negative impacts
- Alternatives to proposed project and areas

- Development of monitoring place
- Major stakeholder consultation
- Borrowing area for sand
- Potential sand bed jetty area for off-loading materials if required

## **B. Detailed surveys**

The Consultant will undertake the detailed surveying of L.Gan.

Detailed surveys include geotechnical survey and hydrological survey required for the detailed design of the proposed roads and storm water management system. The surveys must be carried out as described below. The Consultant must include a detailed activity log of all site investigations.

### **Geotechnical survey**

Geotechnical investigation must be done to determine the physical and mechanical properties of the soil using the tests detailed below.

- 1) Physical properties of soil
  - a) Sieve analysis
- 2) Mechanical properties of soil
  - a) Standard Compact test
  - b) California Bearing Ratio test

The tests should be carried out following the guidelines described below.

#### *Physical properties of soil*

Sieve tests must be done to determine grain size of soil in an area. At least one sample must be taken from each road proposed for construction and depending on road length, multiple samples should be taken such that distance between the sampling points is not more than 200m. For every sieve test, the gradation curve must be plotted, and Coefficient Curvature (Cc) and Coefficient of Uniformity (Cu) must be determined. Well graded soils should show Cc in the range 1 to 3 and Cu higher than 6. All sieve analysis tests can be performed on disturbed samples and soil sample must be taken 100mm below the ground surface. If D60 of soil sample is more than 5mm, then the subgrade sand in that area must be sieved to remove all large soil particles, and the area backfilled with sieved sand.

#### *Mechanical properties of soil*

Standard Compaction tests and California Bearing Ratio tests must be conducted on soil samples taken from each road proposed for construction and depending on road length, multiple samples should be taken such that distance between the sampling points is not more than 200m. Standard Compaction Tests must be conducted to determine Maximum Dry Density (MDD) of soil and Optimum Moisture Content (OMC) of soil. These tests can be done in the laboratory on disturbed soil samples taken from 100mm below ground surface.

California Bearing Ratio (CBR) tests must be done to determine the stiffness of the subgrade soil. These tests must be done on undisturbed samples on actual ground. CBR tests should be done on every road proposed for construction and depending on road length, multiple samples should be taken such that distance between the sampling points is not more than 200m. The top 100mm soil must be removed prior to performing this test. If the CBR obtained is less than 20%, then a 2nd test must be performed 3m away from the initially tested location. If the 2nd CBR is still less than 20%, then the soil must be considered too soft

for pavement construction and a subgrade stabilization method must be proposed. Most common subgrade stabilization method is to remove the soft soil and backfill with a well graded sand.

### **Hydrological Survey**

For the hydrological survey, the Consultant shall:

- undertake literature review of existing studies undertaken for L.Gan 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,
- carry out studies to determine soil percolation rate and infiltration rate,
- develop flood risk maps for L.Gan based on the survey data, and
- carry out the assessment of the current groundwater conditions including level and quality of the ground water.

### **C. Designing of storm water management system in L.Gan (Optional)**

The Consultant shall design the storm water management system as per Employer's proposed method. The Employer has proposed the following storm water management method.

The proposed stormwater system consists of catchpits interconnected with each other by gravity storm water **200 mm and 300 mm UPVC pipelines** as seen in Figure 1. The water will flow from the catch pits via gravity storm water lines to the pump well where the storm water will be pumped out to the sea via an HDPE outfall line. The pump well will be equipped with two pumps with the panel board. Furthermore, a trench is proposed to be installed between the existing island and reclaimed land.

However, the Consultant can propose an alternative to the aforementioned method, given that the design of the storm water management system will be in compliance with the guidelines set by Ministry of National Planning, Housing and Infrastructure (attached to the TOR) and within the Employer's allocated budget.

Construction cost of the proposed storm water management system should not exceed the Employer's allocated budget for the storm water management component of the project. The winning party will be informed of the budget.

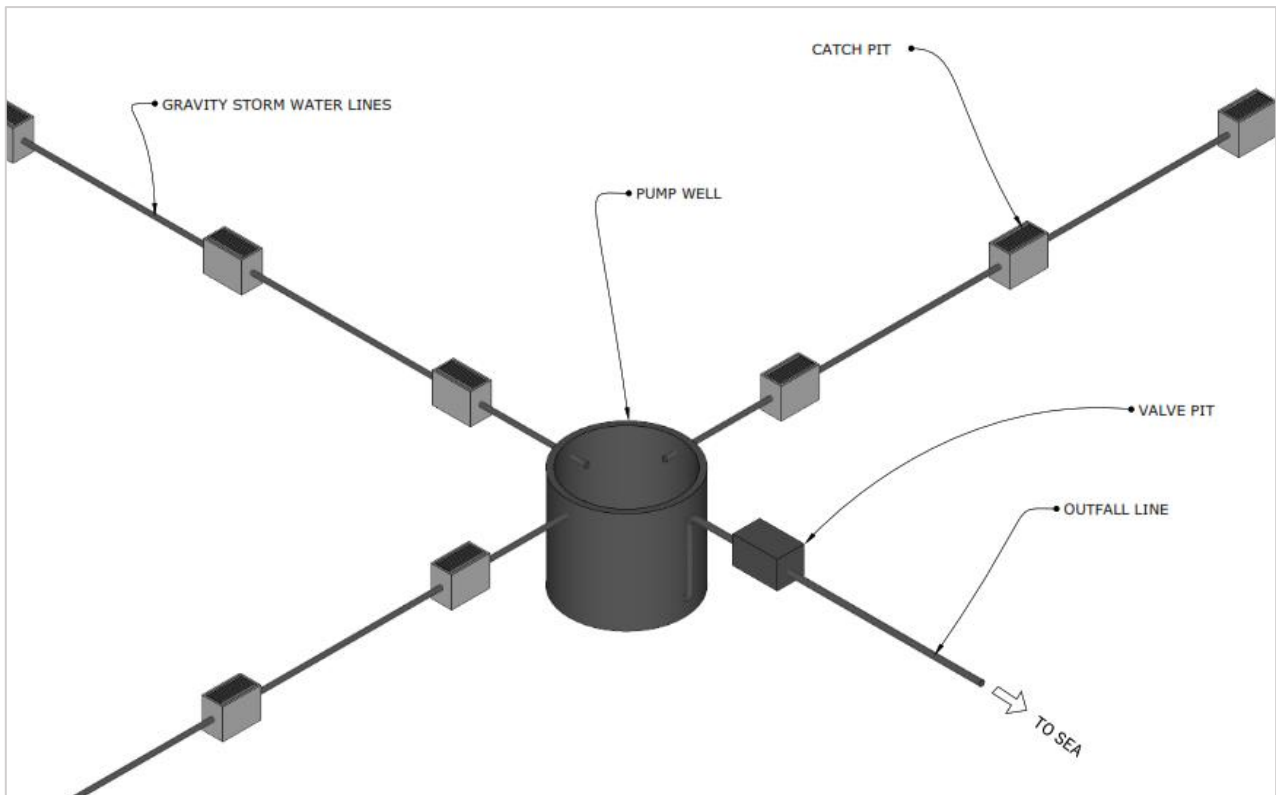


Figure 1: Employer's proposed storm water system

The Consultant shall design stormwater management system for the roads of L.Gan listed in Table 1. For the map of L.Gan and the proposed roads for developed, refer to the map attached to the TOR. The overall responsibility and scope of work of the design consultant shall include, but are not limited to:

- Detailed design of the storm water management system of L.Gan
- Technical coordination of project activities related to the design of storm water management system in L.Gan
- Manage, monitor and evaluate works related to the design
- Act as the representative of the Employer within the specified scope
- Review and verify that correct engineering practices were used in the design while ensuring the designs meet the needs and standards as per the attached design guideline for storm water drainage systems
- Review all available data to facilitate proper engineering designs such as topographic survey, geotechnical survey, hydrological survey, environmental impact assessment report, etc..., required for the design of the storm water management system
- Preparation of final design reports which includes
  - Relevant technical information
  - specifications
  - calculations and analysis reports

- material cost of the Consultant’s proposed storm water management system and
  - drawings including but not limited to
    - construction drawings (storm water plans and all structural components with calculations)
    - cross-sectional elevations such as catchpit invert levels, pipe inverts, distance between catch pits (refer to sample drawing attached)
  - construction methodologies
  - Maintenance manual for stormwater management system
- for the purposes of execution of the works.

*Table 1: Proposed roads to be developed under L.Gan Road Development project*

<b>No.</b>	<b>Road Name</b>	<b>Length (m)</b>	<b>Width (m)</b>
1	Faalan Magu	1150	16.7
2	Ijuthimaaee Magu	295	15
3	Bodumagu (Irumathi)	187	17
4	Sarahadhee Magu	300	12
5	Ihumaa Magu	548.5	9.3
6	Namoonaa Magu	483	13.9
7	Sosun Magu	240	8.5
8	Seyka Hingun	582.6	12.2
9	Ameenee Magu	394	12.1
10	Road-1	323	15
	<b>Total</b>	<b>4503.1</b>	

### 3. EVALUATION CRITERIA

The submitted responsive bids will be evaluated under the following criteria.

Educational Qualification certificates along with Project Completion Certificates must be submitted for validation.

#	Criteria	Weightage %
1	Price	30%
2	Experience & Qualification	70%

The evaluation will be conducted in two stages, which are Technical Evaluation stage and Financial Evaluation stage. The details of the evaluation of the two stages are as follows.

#### **Stage 1: Technical Evaluation – Experience & Qualification requirements for Consultancy (70%)**

The objective of this stage is to evaluate the technical qualification of the bidders in terms of experience & qualification.

#	Criteria for Technical Evaluation	Weightage (%) for the total score
1	Education qualification	35%
2	Experience	35%

Bidders who achieve 45% and higher out of 70% in this stage, will be qualified for the Financial Evaluation stage. Any bidder who does not achieve minimum 45% in this stage, those bids will not be considered for further evaluation. The evaluation for this stage will be done by awarding points based on following categories.

To provide the top-level performance of the assigned task(s), the Consultant shall utilise qualified staff (key personnel as well as support staff) and shall contribute to the preparation, testing, and amendments till the reports are approved from all relevant authorities.

All specialists shall be certified professionals in their respective fields and will have to submit their certificates and CVs for validation. Furthermore, the bidder/staff involved in the design of storm water management system must have approved storm water management system designs in their engineering portfolio.

Completion letters for similar nature projects will be accepted for both Company and for the individual key expert. **Maximum three project completion letters will be considered from each previous client of the Company/Individual key expert.** Completion letters for similar nature projects will have to be addressed either to the Company or the individual key expert stating the nature of works undertaken, contract value (**minimum MVR 150,000**), duration/time period the project was completed.

The Consultant should utilize the following personnel.

Consultants	Qualification & Experience Requirements	No.	Educational Qualification		Project Experience
			35%		35%
			Master's Degree (7 marks)	Bachelor's Degree (4 marks)	Completed similar nature projects (Each project 1 mark, max. 5 projects)
<b>Key Experts</b>			<b>35 Marks</b>		<b>25 Marks</b>
Team Leader / Project Manager	<ul style="list-style-type: none"> <li>· 3 years of experience in subject field</li> <li>· Degree/Master's Degree in Construction Management/Project Management/Civil Engineering related profession.</li> </ul>	1			
Structural engineer	<ul style="list-style-type: none"> <li>· 3 years of experience in subject field</li> <li>· Degree/Master's degree in civil/Structural engineering</li> <li>· Familiar with the design of drainage structures</li> <li>· MNHPI Licensed Engineer</li> </ul>	1			
Geotechnical engineer	<ul style="list-style-type: none"> <li>· 3 years of experience in subject field.</li> <li>· Degree/Master's in Civil Engineering/ Geotechnical Engineering</li> </ul>	1			
Environmental / Hydrological specialist	<ul style="list-style-type: none"> <li>· 3 years of experience in subject field</li> <li>· Must be an EPA registered consultant</li> </ul>	1			
Urban drainage specialist / engineer	<ul style="list-style-type: none"> <li>· 3 years of experience in subject field</li> <li>· Degree/Master's degree in civil/water/environmental engineering</li> <li>· Familiar with the design of drainage structures</li> </ul>	1			
<b>Non-key Experts</b>			<b>NA</b>		<b>10 Marks</b>
Draftsperson	<ul style="list-style-type: none"> <li>· 3 years of experience in subject field</li> <li>· Diploma in Architecture</li> <li>· Considerable knowledge of AutoCAD</li> </ul>	1			
Surveyors, Surveying assistants	<ul style="list-style-type: none"> <li>· 3 years of experience in subject field</li> </ul>	1			
<b>TOTAL MARKS</b>			<b>70 Marks</b>		

## Stage 2: Financial Evaluation (30%)

The objective of this stage is to evaluate and compare the proposed bid prices of the bidders. Only those bidders who achieved 45% points and higher out of points in the technical evaluation stage will be considered for evaluation under this stage.

In calculating the score under this criterion, the party quoting the lowest Price will get the maximum points allocated under this criterion and the points for the remaining bidders will be distributed on a pro rata basis in descending order.

The formula thus used for the computation of the score is as follows:

$$\text{Price Score} = \frac{\text{Lowest proposed total price from among the bids received}}{\text{Particular Bidder's proposed total price}} \times (30\%)$$

During the evaluation stage RDC reserves the right to accept/reject any offer(s) that is higher/lower than 20% of the Market price / the average price of received offers (excluding the offers in question).

## 4. EMPLOYER'S CONTRIBUTION

The Employer will grant access to all available materials which may be required by the Consultant to perform their services such as the following materials.

- Topography survey report of L.Gan
- Design levels of the roads to be developed under this project

## 5. DURATION OF THE ASSIGNMENT

Expected duration of the consultant assignment is **45 days**.

## 6. CONSULTANT'S REPORTING OBLIGATIONS

The Consultant shall submit the following reports for approval. Every report should be up to industry standards and should be accompanied by softcopies of all raw files such as AutoCAD files, storm water models, high resolution pictures, etc..., in a CD.

All survey reports should include Title Page, Table of Contents, Executive Summary, Background and Objectives, Methodology, Results, Conclusion and Recommendations, and Appendices.



<b>Deliverables</b>	<b>Submission Date</b>	<b>Language</b>
Environmental Impact Assessment Report	Within <b>30</b> calendar days from the commencement date	English
Hydrological survey report	Within <b>30</b> calendar days from the commencement date	English
Geotechnical survey report	Within <b>30</b> calendar days from the commencement date	English
Storm water management system concept report, excluding calculations	Within <b>15</b> calendar days from the commencement date	English
Storm water management system final design report, including detailed calculations, (stormwater network, pumpstations, pumps, panel, all structural elements and any others that may be needed for the approval of the stormwater design report)	Within <b>15</b> calendar days from the approval of Hydrological and Geotechnical reports	English