



NATIONAL DISASTER MANAGEMENT CENTRE  
MALE' REP OF MALDIVES



Economic Prosperity – Social Harmony

## TERMS OF REFERENCE Geographic Information Systems (GIS) Specialist

### BACKGROUND

Over the last 10 years, the small island state of the Maldives has suffered from the region's worst-ever catastrophic disaster event, which is the Indian Ocean Tsunami in 2004. Since then, localized disasters due to hydro-meteorological and oceanic hazards have been frequently recurring. Future outlook is likely to worsen according to the modeled impacts of climate change such as sea level rise, changes in rainfall patterns and temperature increase. All these can cause grave risk to the very small islands of the country and the cost of damages may be enormous in relation to the size of the country's economy.

The Government of Maldives is firmly committed to enhancement of its capacity for disaster risk reduction and management (DRRM). To address challenges and constraints to increase Maldives' capacity for DRRM, the National Disaster Management Centre (NDMC) of the Maldives has partnered with the United Nations Development Programme. This project aims to support the Government of Maldives for its enactment and operationalization of Disaster Risk Management (DRM) legislation, strengthening of early warning operating procedures, increasing public awareness and knowledge on disaster risk reduction and climate change adaptation, and increasing community capacity for disaster preparedness.

The project will focus on increasing capacities especially at the island level and work towards achieving the following results:

- Enhancement of island level capacity for disaster response.
- Strengthening of early warning systems.
- Improve capacity of stakeholders through NDMC to report progress according to the Sendai Framework for Disaster Risk Reduction

The National Disaster Management Centre (NDMC) is actively seeking a creative, highly talented Geographic Information Systems (GIS) specialist to obtain services as prescribed in this Terms of Reference (ToR) for the establishment of a Information Hub at NDMC.

### *Disaster Information Hub*

The information hub ensures that stakeholders are informed about disaster related information through a highly enabling and efficient mechanism facilitated through a geographic information system which would enhance informed decision making. The consultant will have a critical role in helping to develop NDMC's information hub and be an integral part of the project Scaling up National Capacity for Disaster Risk Reduction and Management in the Maldives (SNCDRRM) which is a 2-year project funded by the Japanese government implemented by NDMC in collaboration with the United Nations Development Programme (UNDP). provide technical services for NDMC in producing risk mapping products, assessment planning.

### *Innovative Technologies and Community Emergency Response Teams (CERT)*



Community based disaster risk management (CBDRM) plans are crucial especially in the Maldives where exposure to and experiencing severe impacts of natural and human-induced disasters are envisaged to increase in the coming years. CBDRM programme is one of the successful programmes currently operated in NDMC seeking to enhance the disaster management capacities at the community level. The CBDRM approached is aimed at empowering communities through engagement and participation. Communities can identify their vulnerabilities and capacities and work towards increasing these capacities to create resilient community through CBDRM activities. This is a 2-year process, where the programme is initiated with an island disaster management plan workshop which identifies proactive, actions that has to be taken by the community to be well prepared ahead of emergencies or disasters. Formation of CERT in island communities form part of the CBDRM programme. Primarily CERTs are the response arms of a community where CBDRM programme is implemented. The main aim of CERTs is to mitigate and control emergency situations during its initial stages. CERT shall be able to react and respond efficiently and effectively, to the most vulnerable, and act to mitigate further loss or damage, carry out initial field assessments to assess the situation and to coordinate further relief efforts.

NDMC is seeking to strengthen the capacities of CERT through innovative technologies. Mapping exercise involved in the CBDRM programme carried out by CERTs would be more effective if technological resources are deployed to generate real-time maps of the island. A pilot, GIS map of one island (L. Maabaidhoo) was developed with baseline information on capacities, resources and vulnerable groups. This mapping exercise was very effective and a strong requirement for replication in other project islands was observed. NDMC in collaboration with UNDP is trying to build up on this experience with a long-term vision to incorporate the usage of technology in the CBDRM programme and to develop a disaster information hub at NDMC.

The purpose of this ToR is to denote deliverables associated with this assignment and the approach, which will be followed by NDMC to assess, evaluate and select a suitable candidate for the services. This document also illustrates the requirements and conditions which shall be adhered to, to fulfil and qualify for the stipulated services.

**To establish the Information Hub, NDMC is looking for individual consultants to submit expressions of interests along with a financial proposal for the tasks described in this ToR. Deadline for submission of Expression of Interests is 1100hrs on Sunday 19<sup>th</sup> February 2018.**

## SCOPE OF WORK

The consultant is required to assist NDMC in developing a geographic information system with the following components:

- i) Component 1: determination of the right GIS technology for disaster management at NDMC and establish the GIS application and infrastructure
- ii) Component 2: training on basic flight training techniques for mapping
- iii) Component 3: a pilot mapping exercise as a value addition for disaster management for 1 atoll composing relevant hazard zonation, resources, and evacuation maps as indicated in the island disaster management plans
- iv) Component 4: training on collection, standardization of data (both spatial as well as non-spatial) for the preparation of GIS platform for the information hub and creation of maps or visualization output focused on critical infrastructure and natural disasters

## EXPECTED OUTPUTS AND TIMELINE

The final outputs should include but are not limited to:

- i) Full scale GIS system established at NDMC with genuine licensing



- ii) Basic flight training on drones systems focused on DRR interventions trained for a selected group of stakeholders and CERT in one atoll specified by NDMC.
- iii) Initiate, plan and participate in conducting a mapping exercise in collaboration with the trained personnel from the GIS training and CERT members. Focused outputs from this exercise should include but not limited to island situational maps, vulnerabilities and capacities maps, hazard maps and evacuation maps as layers. Various other related information such as island topography, to complement the system to be suggested by the consultant.
- iv) Present and illustrate the outcome of the pilot mapping product in narrative and graphic forms using georeferenced and digitalized as-built imagery.
- v) Serves as a consultant and advisor regarding geospatial and ecological modeling and analysis needs for NDMC
- vi) Finding possible means to link the disaster loss database (Desinventar) to the GIS system and operationalizing

### ***Schedule of reporting***

The draft inception report must be submitted not later than 1 week after the commencement, and the final inception report must be submitted as soon as the draft inception report has been approved by NDMC.

#	Output	Submission date
1	Inception report which includes the determined GIS technology and GIS system set up	1 week
3	Flight training	3 days
4	Mapping exercise for 1 atoll	3 weeks
5	Compilation and digitalization of the maps from the mapping exercise and establishment of the information hub	1 week
6	Delivering a 5-day training on GIS	1 week

### **DURATION**

The total time to undertake the services shall be a period of **six weeks** after signing of the contract. Successful individual must be available to commence the assignment in **February 2018**.

### **QUALIFICATION AND EXPERIENCE**

- A Master Degree in a Science, such as: Disaster Management, Environmental Management/Science, Climate Change, Geographic Information Systems (GIS), Data Technology or any related fields.
- Drone Pilot Certification would be highly desirable however, candidates possessing proven hands-on capability to conduct field assessments and the ability to knowledge transfer to a crowd new to this technology shall be considered (in such case documented evidence of work carried out with Drones shall be submitted along with the application).
- A minimum of 2 years of relevant experience is required.



- Preference will be given to candidates with one or more of the following: knowledge of climate change and disaster risk reduction in the Maldives, experience in public safety operation and incident management, proven ability in instructing and facilitating technical jargon to laymen crowds.
- Experience in the design and use of data analysis algorithms, knowledge in drone-based data acquisition, specifically in photogrammetry, and data products is a considered an advantage.
- Candidates must have excellent communication skills and be experienced with the required software for the consultancy.

## DELIVERABLES

#	Output
1	Inception report which includes the determined GIS technology and GIS system set up
3	Flight training
4	Mapping exercise for 1 atoll
5	Compilation and digitalization of the maps from the mapping exercise and establishment of the information hub
6	Delivering a 5-day training on GIS

## SELECTION CRITERIA

The GIS consultant will be selected on the following criteria

Output	Percentage
Academic qualification	40%
Experience in similar works	20%
Pilot Certification for flight training	10%
Interview	30%

## FACILITIES PROVIDED BY THE CLIENT

The project management unit in NDMC will provide necessary information, material and equipment including drones for the fulfilment of the tasks mentioned in this ToR. All travel associated with this consultancy will be borne by the project.

## REPORTING



The consultant will be homebased with weekly meetings with the project management unit at NDMC. The consultant will report directly to the Project Manager throughout the duration of the contract unless otherwise advised by the client.

## APPLICATION

- Letter of expression of interest (EOI)
- Financial proposals quoting the services prescribed in this ToR
- Curriculum Vitae (summarizing the applicant's qualification to perform the services, including similar assignments, experience and availability of appropriate skills)
- Copy of National Identification Card
- Attested copies of educational certificates

## SUBMISSION

Expressions of interests and financial proposals must be delivered in sealed envelopes titled '*EOI for the establishment of a Information Hub at the National Disaster Management Centre*' and the submitting individuals name and address to the address below on or before 1100hrs 19<sup>th</sup> February 2018 local time. For electronic submissions, send in to [info@ndmc.gov.mv](mailto:info@ndmc.gov.mv)

### Queries

For any queries please email:

[ahmed.aslam@ndmc.gov.mv](mailto:ahmed.aslam@ndmc.gov.mv)

Project Manager

Scaling up the National Capacity for Disaster Risk Reduction and Management in Maldives

National Disaster Management Centre

Rihijehikoshi, Ameenemagu

Male' Maldives